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MAYHEW'S

ILLUSTRATED HORSE DOCTOR.

R. N MANNEY,
VETERINARY SURGEON.

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MAYHEW'S

ILLUSTRATED HORSE DOCTOR:

BEING AN ACCOUNT OF
THE VARIOUS DISEASES INCIDENT
TO THE EQUINE RACE;

WITH THE LATEST MODE OF TREATMENT
AND REQUISITE PRESCRIPTIONS.

FOUR HUNDRED ILLUSTRATIONS.

Revised and Improved

BY

JAMES IRVINE LUPTON, F.R.C.V.S.,
AUTHOR OF SEVERAL WORKS ON VETERINARY SCIENCE AND ART

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VETERINARY PUBLISHER AND BOOKSELLER,
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PREFACE.

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SINCE the first issue of Mayhew's *Illustrated Horse Doctor*, several works on veterinary pathology have emanated from the press, which through the medium of scientific investigation and practical experience have added largely to our knowedge of equine maladies, but have not drawn attention to the ease with which disease might be prevented by a due observance of hygienic laws, and a greater regard to the wants of horses during their efforts to serve man. This, in the book under revision, constitutes an especial feature, and has been retained in the present issue, to prove that kindness to animals should be more commonly practised, if not from any higher motive, certainly because it is the truest economy; to convince the public by appealing to the eye and understanding, through the means of the engravings and letterpress, that the equine race inherits higher feelings than the vast majority of mankind are prepared to admit; and, by informing men of their liabilities and their duty to dumb creatures, to induce horse-owners not only to be masters but protectors of the timid life which is disposed to serve and willing to love them.

To attain this end suggestions have been made relative to the construction, ventilation, and drainage of stables; the unwise system of stabling horses in stalls has been inveighed against, and the rational plan of housing them in loose boxes has been proclaimed. In revising the *Illustrated Horse Doctor*, it has been my

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endeavour carefully to retain the pith of Mayhew teaching, but at the same time to eliminate what was antiquated and contrary to my experience. The ignorance of the old farriers who propagated the notion that bleeding was of the first importance in treatment of almost any kind of disease, and that salutary effects were produced by letting blood even from animals in health, was prosecuted not only in this country but throughout the Continent, to the middle of the current century, and we find that Mayhew too frequently adhered to this practice, and advised it in cases where its adoption would tend rather to retard than effect cure. Bleeding is seldom, if ever, required, as the results which it is said to induce can be procured by simpler and safer means, without depletion and consequent systemic weakness; and for this reason the revision, although it explains how "to bleed a horse," seldom advises the practice of phlebotomy as a remedial measure in the treatment of disease.

The strides that have been taken in scientific research have taught lessons which have given a quietus to ignorance and superstition, and with them charms and incantations have ceased to occupy the attention of sensible minds. Such being the case, it is surprising to find that still those are to be found who are advocates for the barbarous practice of firing. No one has yet been able to describe in what way it can act beneficially. Some assert that, by producing intense inflammation, it creates excited vital action, which, on subsiding, causes absorption or partial absorption of diseased tissue; or, in other words, by firing a horse for bony spavin, we do so with intent to disperse it. Does firing any kind of bony tumour restore the affected part to its normal condition? Again, horses over at knee are sometimes fired, the operators telling us they do so to strengthen their legs, *i.e.*, would have us believe that by scoring these parts with a red-hot iron, weakened possibly by hard work, the bent limbs will become straight; and they say this expected change may exert a beneficial effect by contracting the skin, which has been mutilated by the operation, and thus form a permanent bandage and an adjuvant during

locomotion. Allowing firing, for the sake of argument, to be useful in certain cases, what can be advanced in defence of this practice when applied to colts and horses as sound as when foaled? yet some men so allow their horses to be tortured, and declare that it strengthens the parts operated on, and prevents diseases consequent upon severe strain. No doubt that which is denied by nature can be supplemented by art, but no good can arise by tampering with tissues which nature has wisely and sufficiently formed for the performance of those functions for which Omnipotence ordained them. Neither can there be any art in injuring a healthy structure with the idea of increasing its tonicity. Blood letting and firing were thought useful in the past, and ignorance has perpetuated the adoption of the red-hot iron, "even unto this day." The torture inflicted on horses by the use of the bearing rein, and the painful disease it induces, has been explained and placed before the public in a distinct but, at the same time, in no exaggerated light, and it is trusted humanity will overcome ignorance and fashion by banishing from the harness-room this instrument, which is not only provocative of pain but of an incurable malady. A chapter on anæsthetics and the modes of exhibition have been added to the present Edition, not only because most operations are more easily performed upon animals whilst rendered comatose and insensible to pain, but also for the sake of humanity, as it is the duty of man to alleviate the sufferings both of man and the animals under his protection, and especially when necessity demands the employment of the surgeon's knife.

Veterinary science, like other branches of learning, has advanced in knowledge, and receives at this day greater public support than it did only a few years ago. Yet, although among its members are to be found men of culture and refinement, it has not attained to that universal recognition that its importance deserves. Servants to veterinary surgeons, coachmen and grooms, persons innocent of science, incapable of diagnosing disease and ignorant of the nature of drugs, are still considered by some people competent to treat their sick or injured animals, who, by employing

them, retard the progress of a useful profession. Is it possible that the uneducated can practise a calling which, to be successful in, requires years of study, an accurate knowledge of the conterminous sciences—anatomy, physiology, chemistry, and pathology, etc.? Yet sometimes cunning is preferred to intelligence, and ignorance is allowed to block the pathway of knowledge. Similarly as in the past the old farriers imposed upon the public, so at this day the cunning doctors, as they are called, trespass upon ground dangerous to themselves and injurious to their patrons.

An attempt has been made to place before my readers the cause and effect of disease, and to show in many instances how by justly recognising the natural propensities of horses, their habits of life in a wild state, and by a due attention to the construction of stables and sanitation, life can be prolonged and disease prevented. "Prevention is better than cure," and disease can to a great extent be kept from the stable if the groom understands his business and performs his duty; but, when it makes its appearance, the master should be told of the fact, when he will best consult his own interests by at once seeking the services of an experienced and duly qualified veterinary practitioner. The life a horse is compelled to endure under subjugation exposes him to accident, and renders him an easy recipient of disease. Hard work, especially that imposed upon young animals before their bones are thoroughly cemented together or their tissues sufficiently developed, unstrings the animal machinery. Immature structures cannot withstand the ill effects of severe physical strain without running risks, terminating in disaster. The constant reports of colts breaking down in their training, and of young horses going lame soon after sale, is sufficient to prove the truth of this assertion. We act contrary to common sense and humanity in subjecting horses to work too early in their youth, and causing them to perform the most laborious tasks during their old age. The gentleman's brougham horse in his declining years is banished to the cab rank, and the worn-out cart horse is sold to the slavery of the poor contractor's brick cart. It is to our interest, as

certainly it is our duty, to protect from injury and suffering the creatures who minister to our necessities and pleasures, and whose lives are engaged in one incessant round of toil for the benefit of man, who in return for such services often maltreats, and seldom recognises the necessity of that tender care and judicious management which is calculated to preserve horses in health, and to protect them from disease.

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THE

ILLUSTRATED HORSE DOCTOR.

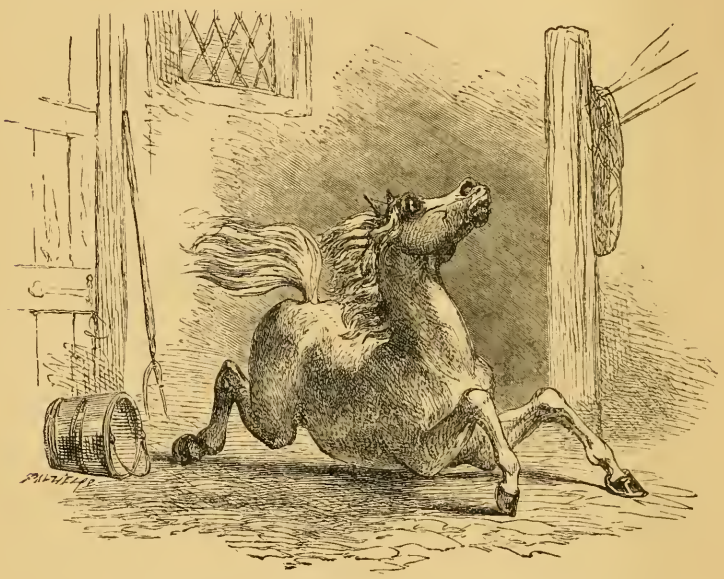
CHAPTER I.

THE BRAIN AND NERVOUS SYSTEM—THEIR ACCIDENTS AND THEIR DISEASES.

PHRENITIS.

The animal body is composed of various tissues intimately connected with one another, which perform their functions under direction and control of the brain, and which are carried into effect by its electric wires — the nerves; the motory control every action of the body, and exert a protective and preservative influence upon the tissues over which they preside; the sympathetic govern the internal structures, the glands, intestines, heart, and those which assist in supporting the body and giving tone to its development. Any injury to the brain or nervous system, whether it be the result of accident or disease, is sure to give rise to symptoms of a most marked character. Pressure on the brain, whether it be from tumour or any other cause, is sure to produce symptoms indicative of madness, and usually occurs as the result of cerebral congestion. A horse when so afflicted exhibits symptoms of madness, and is said to be affected with the disease known as phrenitis. The animal in this condition disregards all recognitions and, apparently, loses all timidity. It suffers the greatest agony, and no terror can appal it; it rushes and bites at every object within its reach, and even

tears the flesh from its own body. Every movement seems designed to end its own existence; but the furor has no malice in it. The creature strives only to injure itself. It may in its efforts shatter and demolish the structures which surround it; but it does so without intention. That is merely the result of its being carried away beyond the things of this world by a mighty anguish. It desires harm to no one; but it cannot



A HORSE MAD, OR WITH INFLAMMATION OF THE BRAIN.

remain quiescent, and endure the torment which rages within its skull.

When this stage of the malady appears, the best thing is to anticipate the evident wish of the animal. It is idle to prescribe treatment for an infuriated animal, but there is a time early in this disease before the violent symptoms have manifested themselves — *i.e.*, when the horse is dull, drops his eyelids, takes no notice of surrounding objects or of noises, and grinds his teeth— then treatment may be attempted: consists in giving purgatives of double strength, and repeat them every three hours, till the bowels are copiously relieved or the pulse changes, or the general appearance indicates improvement. Afterwards, administer seda-

tives, always as infusions. Half a drachm of aconite root, or a drachm of digitalis, should have a pint of hot water poured upon it. When the liquid is nearly cold, it should be strained and the dose may be repeated every half hour, until its operation is witnessed in the more quiet behaviour of the animal.

In the generality of cases, however, no opportunity for such treatment is presented. The disease is most common in the agricultural districts, and is usually seen where carters indulge their passion in the butt-end of the whip employed upon the horse's head. The cause is, however, carefully concealed, and after the violent stage has set in the original wound is generally mistaken for some self-inflicted injury.

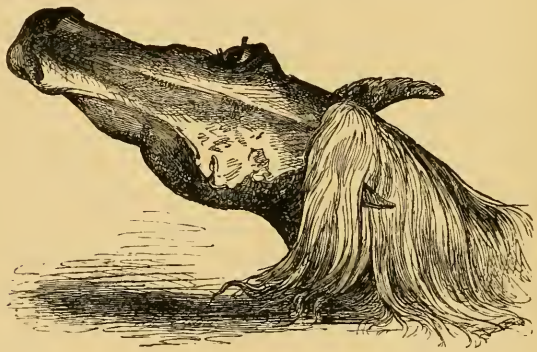
Should the animal, by such means, recover, treat it gently; do not excite it; for phrenitis is apt to return. Even recovery is not always to be wished for. The depletion, imperative for the cure, too often engenders the weakness which no care can eradicate; and the animal survives only to change from the willing servant into a troublesome valetudinarian.

ABSCESS WITHIN THE BRAIN.

This sad affection is often produced by external injury. A horse runs away and comes in contact with some hard substance. The blow is of sufficient violence to fracture the strong cranium of the quadruped and to smash all that remains harnessed to the animal. Here we have a reason why man should establish more than a brutal mastery over the animal he possesses. The horse is the most timid of creatures. It, however, quickly learns to recognise the voice of its owner. In its vast affection, it soon trusts with confidence to the person who is kind to it. An occasional word thrown to a patient and willing servant, spoken softly to the animal which is putting forth all its strength for our pleasure, would not be cast away. When dread overpowers the horse and it begins to run at its topmost speed, do not pull the reins: the first check should be given by the voice. Speak cheerfully to a timid creature. If the first word produces no effect, repeat it. Watch the ears. If these are turned backward to catch the accents, talk encouragingly to the horse. The voice of one it loves will restore its confidence. The pace will slacken. Talk

on, but always in a tone calculated to soothe distress. Then gently touch the reins. The first gentle movement may not be responded to, but the second or the third will be; and the animal, released from terror, is once more under your control.

This is much better than tugging and flogging, which obviously are thrown away upon a body that horror has deprived of sensation. The noise and the resistance but feed the wildness of the



A HORSE DYING FROM ABSCESS WITHIN THE BRAIN.

fear, and, in the end, the driver is carried to a hospital, the horse being laid prostrate among the ruins it has made.

When led back to the stable, a wound is discovered on the animal's forehead. It is so small it is deemed of no consequence. A little water oozes from it—that is all—it does not send forth matter, or it might deserve attention. However, in a short time the horse become dull. It will not eat. Soon it falls down and commences dashing its head upon the pavement. There it lies, and, day and night, continues its dreadful occupation. One side of the face is terribly excoriated, and must be acutely painful; but the animal still continues to dash his head against the ground, each stroke shaking the solid earth, which it indents. At last death ends the misery, and a small abscess, containing about half a drachm of healthy pus, is discovered in the superficial substance of the brain.

Physic or operation is of no use here. The cranium of the horse is covered by the thick temporales muscles. This alone

would prevent the trephine being resorted to. Blood would follow the removal of any portion of the skull. Besides, what or who is to keep the head still during the operation? and, were the operation possible, who would own an animal with a hole in its skull? The only means of cure would be to afford exit to the matter; and, to do that, is beyond human ingenuity.

STAGGERS. SLEEPY STAGGERS AND MAD STAGGERS.

Staggers means no more than a staggering or unsteady gait—an incapacity in the limbs to support the body. It therefore, by itself, represents only that want of control over voluntary motion, which generally accompanies injuries to the brain. Mad and sleepy staggers represent only different symptoms or stages of cerebral affection. Sleepy staggers implies the dull stage, which indicates that the brain is oppressed. Mad staggers denotes the furious stage, when the brain has become acutely inflamed.

There is but one origin known for staggers, and that is over-feeding. Carters take the team out, and forget the nose-bags. The omission is not discovered till far on the road. No thought is entertained of turning back. The poor drudges, consequently, have to journey far, to pull hard and long upon empty stomachs.

When home is at length reached, the driver thinks to make amends for neglect: the rack and manger are loaded. Such animals as are not too tired to feed eat ravenously. The stomach is soon crammed; but fatigue has weakened the natural instincts, and domestication has taught the horse to depend entirely on man. The creature continues to feed, till a distended stomach produces an oppressed brain. An uneasy sleep interrupts the gormandizing. The eye closes and the head droops. Suddenly the horse awakens with a start. It looks around, becomes assured, and takes another mouthful. However, before mastication can be completed, sleep intervenes, and the morsel falls from the mouth, or continues retained between the jaws.

This state may continue for days. The horse may perish without recovering its sensibility; or mad staggers may at any period succeed, and the animal exhibit the extreme of violence.

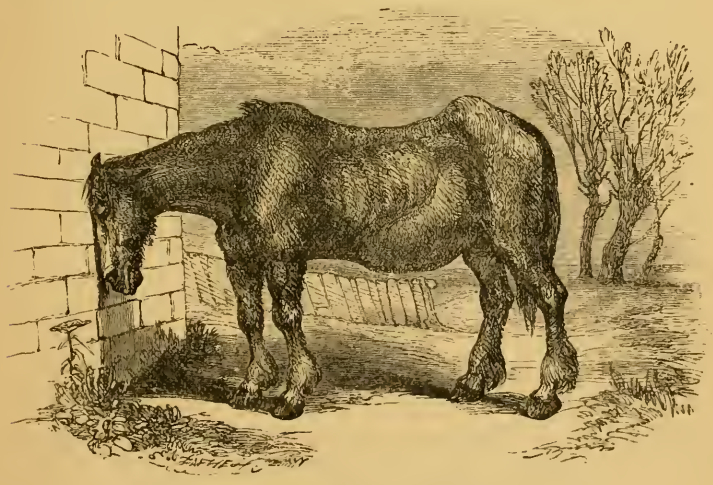
Mad staggers equally results from carelessness in the horse-keeper. The animal, which gives itself up entirely to the custody of man, too often experiences a fearful return in recompense for its trustfulness. Any neglect with regard to the feeding of a horse may entail the worst; and a most cruel death upon the inhabitant of the stable is too often its reward. The groom, perhaps, may have, on leaving the stable, neglected to close the lid of the corn bin. The horse in his stall, with his exquisite sense of smell, scents the provender and becomes restless. His desire is to escape from the halter. With fatal ingenuity the object is accomplished, and the next moment the animal stands with its nose among the coveted oats. It eats and eats as only that being can, whose highest pleasures are limited to animal enjoyments. After a time it becomes lethargic; but from that state it is soon aroused by a burning thirst. The corn has absorbed all the moisture of the stomach, the viscus being dry and distended. Pain must be felt, but thirst is the predominant feeling. Water is sought for. None is to be found; and the sufferer takes his station near the door, to await the appearance of his attendant.

No sooner is the entrance opened, than the quadruped dashes out. With all speed it makes for the nearest pond. There it drinks the long and the sweet draught few in this life can taste; but to know which, is to die a terrible death. The corn swells more with the liquid imbibed. The stomach is now stretched to the uttermost. Continued tension causes inflammation. The brain sympathises, and the horse speedily becomes acutely phrenitic.

There is, however, a strange symptom, in which the two disorders appear mingled. The sleepy fit is not entirely removed, nor are the violent symptoms fully developed. The horse in this condition will press its head against a wall. In doing this, it only displays an impulse common to most animals in the sleepy stage; but the peculiarity is, that the eye may be half unclosed and the limbs vigorously employed, as though a trotting match were going forward. The breath will quicken and the creature be coated with perspiration. This attitude and motion may subside, and recovery may ensue; but commonly the quadruped drops, moves the limbs as it lies upon the ground, and is only quieted by death.

When corn has been gorged during the night, the animal must be rigidly kept from drinking. A quart of any oil should be immediately administered. A pint of oil is the ordinary dose; but here there exists more than an ordinary disease. Besides, much of the fluid will sink between the grains and, probably, not half of it will reach the membrane of the stomach.

Oil is preferable to the solution of aloes, which is generally given, inasmuch as it will not act upon or swell the corn, so readily as any medicine dissolved in water. Should no amendment be detected, in six hours repeat the dose. In another six hours, give another dose with twenty drops of croton oil in it. When another period has elapsed, should no improvement be noted, give thirty drops of croton in another quart of oil. Should none of these drinks have taken effect, the round must once more be gone over. However, at the slightest mitigation of the symptoms, or even suspicion of amendment, stop all medicine at once. The altered aspect of the horse is the earliest symptom that the distension is relieved.

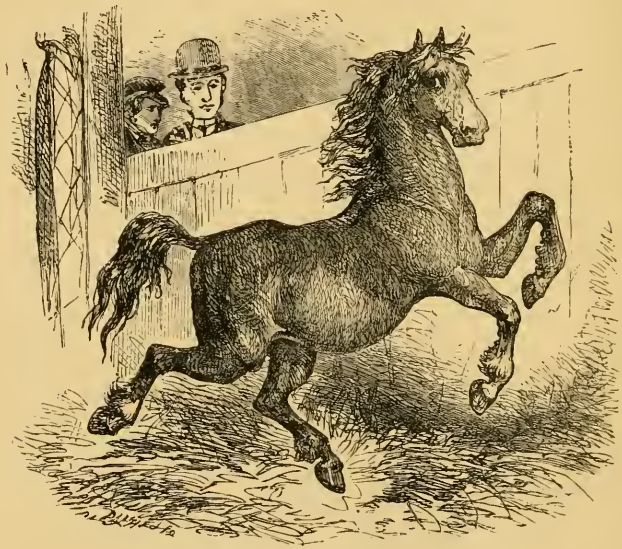


SLEEPY STAGGERS, FROM OVER-GORGING

In sleepy staggers the head hangs pendulous, or is pressed firmly against some prominence; the pulse throbs heavily, the breathing is laborious, and the animal snores at each inspiration; the eye is closed; the skin cold and the coat staring; the nasal

membrane leaden; the mouth clammy; the ears motionless; the tail without movement; and the breathing alone testifies that it is a living animal we look upon.

The signs that announce the advent of mad staggers, from whichever cause the disease may arise, are always alike. The lid is raised, and the eye assumes an unnatural brightness. The nasal membrane reddens; the surface becomes as hot as it was previously deficient in warmth; the movements are quick and jerking. The breath is no longer laborious; it is rapid, sharp, and drawn with a



THE HORSE DURING THE MAD STAGE OF STAGGERS.

kind of panting action. The whole appearance is altered. The characteristics of approaching frenzy can hardly be mistaken.

Then comes the most painful duty of ownership over life. The proprietor has then to make a speedy choice, whether his dumb servant is to take a desperate chance and undergo a torture, for which the concentrated pleasure of many lives could not atone, or be deprived of the fatal power to injure others and itself. Humanity would unhesitatingly pronounce for death; and, in this case, there is need of haste. The symptoms are so rapidly matured that, in ten minutes, the poor horse may be sadly hurt and bleeding, panting and rearing in the centre of a desolated

stable. A mad horse is a terrible object! Its strength is so vast, that ordinary fastenings yield before it; but the animal, even when deprived of reason, wins our respect. Suffering will find expression in energetic action. Man, when a tooth is about to be extracted, generally clenches something; but what were a hundred teeth to the agony which causes every fibre in the huge framework to quiver. The perspiration rolls off the creature's body. The eye glares with anguish, not with malice; the body is strangely contorted, but there is no desire to injure. Who, contemplating such a picture, could forbear speaking the word which should grant peace to the sufferer, although the order necessitate some violence to the feelings of him who is invested with power to command?

MEGRIMS.

It is only within the last few years that comparative pathology has been studied with any effect; before this period either it was thought to be impossible for animals to be affected with the same or similar diseases to man, or it was of too little importance for consideration. The study of helminthology has opened the eyes of physiologists, and great discoveries in this as in other directions have been made, how diseases can be transmitted from one animal to another, and to man himself, or how the same cause will produce the same malady in man as animals. Megrims, evidently, is a form of epilepsy; yet, to speak of an epileptic horse would, probably, induce laughter in any society. Notwithstanding which, man is not isolated in this world: he is associated with the creatures of the earth, not only by a common habitation, but by similar wants and like diseases. He is united by Nature to every life that breathes. His heart should feel for, and his charity embrace, every animal which serves him. He has his duty towards, and is bound by obligations to, every creature placed under his control. None are so subject to his will as is the horse; none have such powerful claims to his kindness and forbearance. The noble animal is begotten by man's permission; its course in life depends upon his word: for his service it is compelled to surrender everything—freedom, companions and paternity. Its owner's pleasure becomes its delight; its master's profit is its recreation. It is the perfect type of an abandoned slave; body and life, it devotes itself to

captivity. It is sad to think how bitter is its recompense, when an obvious similarity, even in affliction, has not to this hour been recognised.

Megrims is sometimes caused by the existence of tumours on the brain, and like all permanent pressures to this organ, will from time to time induce symptoms of mania, but not of the permanent nature noticed in phrenitis, but, like epilepsy in man, will manifest itself only on occasions, perhaps in certain subjects only during some kind of exertion. In others, it will be present only during particular states of rest. It may occur from pressure of the collar to the blood vessels at the root of the neck, which impedes the flow of blood to and from the brain, thus causing temporary congestion of this organ, and the resulting epileptic fit.

All horses may show megrims; some when at work, and some only while in the stable; others in the glare of day, and a few during the darkness of night: but of all, draught horses are the most liable to the malady. This may be because harness horses are subjected to the most laborious and most continuous species of toil. A horse fettered to a vehicle, obviously must strain to propel as much or as long as the person entrusted with the whip thinks the animal should draw. Men's consciences, where their own convenience and another's exertions are the stake, generally possess an elastic property. It takes a great deal to stretch them to the utmost. An Arabian proverb says, "It is the last feather which breaks the camel's back;" but the English driver knows the entire pull is upon the collar, and he is moved by no considerations about the back. If the whip cannot flog the poor flesh onward, a shout and a heavy kick under the belly may excite the spasm, which, in its severity, shall put the load in motion.

Age does not influence the liability to megrims. The colt, which has done no work, may exhibit the disease, and the old stager may not be subject to its attacks. One horse may die in the field from exertion and never display the malady; another shall be led through the streets and exemplify megrims in all its severity. One shall be merely dull—the disorder shall never get to the acute stage, though the fits may be repeated. This last, to the surprise of its master, shall every now and then stop, stare about, and proceed as though nothing were the matter. A second, when mounted, will be seized by a sudden impulse and run into

shop doors; while a third, being between the shafts, will be possessed with an irrepressible desire to inspect the driver's boots.

The horse often becomes suddenly stubborn. The reins are jagged and the whip applied to no purpose. The animal will only go its own way, which is commonly beset with danger. Perhaps, it may persist upon galloping, head foremost down an open sewer; probably it will rush up the steps leading to some mansion, and beat the door in with tremendous knocking.

Then come convulsions, followed by insensibility. If such a scene occur in a city, of course a crowd collects. Opinions are noisy and various; but a majority incline towards bleeding from the mouth. It is only to cut the palate, and a dozen knives, already opened, are proffered for the purpose. However, let the person in charge attend to no street suggestion. Let him at once seat himself upon the horse's head and remain there, till consciousness returns; then speak kindly to the sufferer, loosen the harness, and take care that the animal is perfectly recovered before it is permitted to rise.

Dealers pretend that a horse subject to megrims is to be readily told. A horse, after repeated fits, is easily singled out; but the animal which has experienced only a single attack, no man could challenge. One attack, however severe may be its character, will not necessarily leave its impress upon the countenance. But the creature subject to such visitations soon assumes a heavy, flaccid, and stupid expression. The disease distorts no feature, but it leaves its mark behind; and any man, acquainted with the subject, would have no difficulty in picking from a drove the horse which has endured repeated fits of this disorder.

THE EXPRESSION CHARACTERISTIC OF REPEATED ATTACKS OF MEGRIMS.

Another class of knowing ones pretend they can drive a megrimed horse any distance, by simply keeping a wet cloth over the brain. This last experiment is, however, not inviting; and the author has yet to be assured by science that a wet rag over the brain would repose upon the primary seat of the disease.

When a horse has the first fit of megrims, at once throw the animal up. Do not strive to sell the diseased creature, as such a sale is illegal. The law presumes everything sold to be fit for its uses. Thus, a person buying rotten eggs can recover at law, because eggs are sold for human food, and no man can eat a tainted egg. So a megrimed horse is unfit for employment. Recovery in this disease is always doubtful. A chance is best secured by throwing the horse up on the first attack. Do not turn a sick animal out to grass. Keep in a loose box, covered with plenty of straw. Feed liberally, and with the best food. Have the body regularly dressed, and the animal led to, not ridden to, exercise. Allow a quart of stout every morning and half-a-pint of oil every night. Above all things, attend to the stabling. Let the box be large and well ventilated. Air is as essential as more substantial nutriment to life, and is consumed night and day. Food has to undergo a complicated change, and to travel far before it joins the blood. Air is no sooner inhaled than it is immediately absorbed by the blood. After such a statement, it is left to the reader's reason to decide upon the importance of pure air towards sustaining health. Probably, were stables erected with a little less regard to the proprietor's expense and the builder's convenience; probably, were they made in some degree proportioned to the magnitude of their future inhabitants, and were the comfort of the captive a very little considered in their construction—the health of a horse might not be so very telling a proverb; while megrims, under a better treatment, if it did not disappear, might not be so very common. The system persisted in of placing an animal, by nature gregarious, who in a wild state would travel miles in the quest of food, in a stall, confined by the halter from day to day to almost immobility, must act most injuriously to its wellbeing. The horse goes bent in front, and the constant stationary position robs its limbs of that activity to which nature ordained them. Its health suffers and limbs stiffen, as much from limited and restricted motion as from hard work.

RABIES

May affect any living animal. It is propagated by contagion, the infliction of a bite from a rabid dog or cat is nearly sure to pro-

duce rabies in the creature bitten. Until quite recently it was thought to be incapable of transmission between herbivorous tribes, or from them to carnivora or omnivora, but our recent experience with deer in Richmond Park, and the experiments which the outbreak among them necessitated, has been the means of affording valuable information on this subject. Rabies may be communicated through the medium of a bite of one species of animal to that of another—by the dog to the fowl, by the deer to the dog; and this has only lately been established as a fact. It is essentially a nervous disorder. From the first, it influences the brain to a degree which no other malady seems capable of exercising. The animal constantly licks some portion of the body. The place appears to itch violently, and the tongue is applied with an energy and a perseverance highly characteristic of an overwrought nervous distemper. The appetite always is affected; sometimes it is ravenous. The rack is not only emptied with unusual speed, but the bed, however soiled, is also consumed with more than apparent relish. Generally, however, the desire for provender is destroyed. Sometimes the longing for fluids is morbidly increased. The horse plunges his head to the bottom of the pail, will bite at the groom, who endeavours to interrupt the draught, or seize the wood between its teeth and crush it with a powerful gripe. Sometimes water will cause spasm, and be avoided with horror. The animal's likings may be morbidly changed: it will occasionally devour its own excrement, and lick up its emissions.

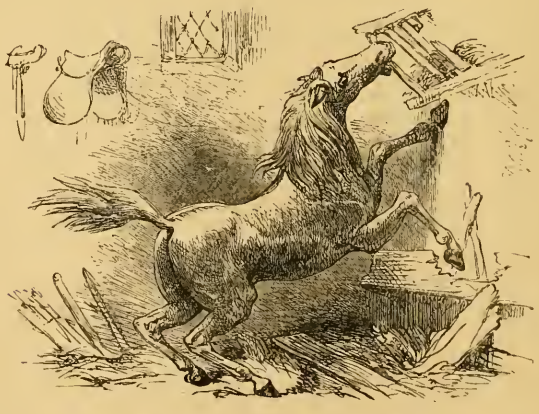
The nervous system is always highly excited. The horse starts at the smallest sound, trembles violently without a cause, flies backward, hangs upon the halter, stares wildly, and bursts into a copious sweat without any apparent reason being detected. Its voice is also changed, and the expression of the countenance invariably altered. The neigh is squeaking, and the face is at the commencement characterized by immense anxiety, which is soon changed for a peculiar aspect of cunning, mixed with a grinning ferocity.

Rarely, however, all the foregoing symptoms are absent. The horse is harnessed and taken to work. Suddenly it stops, appears stupid, and threatens to fall. In a short time it recovers, and the labour is proceeded with. The fits occur again and again. At length they end in violent shivering. When the tremor ceases,

the recognition is not perfectly recovered. The breathing is quick and sharp; the eye bright and wild. The animal is turned homeward, but seldom reaches the stable before the furious stage begins.

THE COUNTENANCE OF A HORSE WITH RABIES.

Rabies is commonly matured before the expiration of the sixth week. A fortnight is the earliest period of its appearance; but writers have asserted, that the imbibed virus will remain dormant for twelve months. It is well known that these periods of incubation vary; but the cause can in some measure be explained. There is no doubt that the disease does not declare itself until the rabid virus or parasite has invaded the brain; until, if the disease be caused by a microbe, this organism has taken possession of its proper habitat—the brain or spinal marrow; and both experiment and observation favour this idea of parasitic invasion. And if this be the case a short or long period may be passed before such



THE DESTRUCTIVE IMPULSE OF RABIES.

life can find its way from the bitten skin to the brain. We know well that the virus, whatever it may be, never affects an

animal until the brain or nervous system is involved; it remains inoffensive in any other tissue. It is only when the nidus for its development has been reached that the violent symptoms occur. It may remain dormant in the injured tissue for weeks or months, or may escape from control in a few days; and in this way the variation in the periods of incubation may be explained.

The subject of this disease always evinces most violent symptoms, and is a danger to himself and all living creatures near him; and for this reason, whenever a suspicion of this incurable and horrible disorder is entertained, place the horse by itself in a building with bare walls, but capable of being looked into through a window. Put food and water in the house, and, if the door be not strong, have it barricaded. Let no one enter for at least three days, as, during this disease, the horse is both mischievous and dangerous. The pain is such that it seeks relief in destruction. All breathing and moving creatures first attract its rage; but, wanting these, its frenzy is expended in breaking, rending, and scattering inanimate objects. Its ability to destroy is only limited by the duration of the disorder.

Let as few people as possible be near the rabid horse. The quadruped's nerves are then alive to every impression. The presence will be detected, though the person be assiduously concealed. The sound of breathing even adds to the torture. Keep all people away but one; and that one should be the best shot in the neighbourhood. Let him approach, aim steadily, and pull the trigger; for a bullet well placed is the only remedy the author knows which can stay this fearful disorder.

TETANUS.

Tetanus is defined to be spasm of the muscles of voluntary motion. That definition is right, as far as it goes. The disease, however, is the same in man and horse. The human being complains of the breathing being much oppressed, and of pain at the pit of the stomach. Such complaints show the diaphragm to be involved, while the large doses of strong medicine, which can be swallowed with impunity, prove the abdominal contents have not escaped. Therefore, the author regards tetanus as spasm of the entire muscular system.

A horse of any age may exhibit tetanus. Colts, newly dropped, have displayed the disorder, and all animals are liable to its attacks; but the very aged are least subject to this malady. Animals of a highly nervous temperament are most inclined towards it.

It is said to be of two kinds: Traumatic tetanus, when it springs from a wound; idiopathic tetanus, when it appears without there being any known lesion to account for its presence. That this disease is caused from infliction of a wound is a fact beyond all doubt, and that it occurs more from injury that tears a part than from a cut from the surgeon's knife; and for this reason it has been supposed that the manner in which nerves may be torn accounts somewhat for the appearance of tetanus. Yet although we recognise a cause of its traumatic character, its idiopathic is involved in mystery, simply because we are unable to detect the existence of any wound or external injury. But, though such is the case, it can easily be understood how easily a laceration or rupture of some internal tissue would become provocative of this disorder, as that of a broken knee. And in our opinion tetanus nearly always results from some lesion, either on the outside or within the living body. Tetanus is distinctly a nervous affection, and may arise from the imposition of some depressing influence upon the nerves.

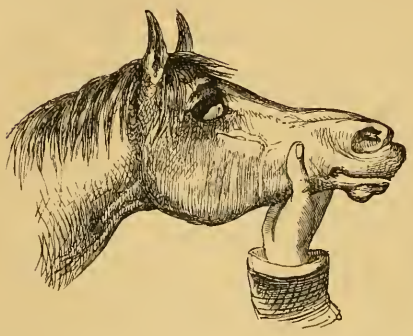
Cold, rain, draughts of air, are all likely to originate it. Their potency, perhaps, ranges in the order they are placed. A gentleman is apt to dismount at some hospitable house and to leave the animal, which has quickly borne him thither, shivering in the night air. The master enjoys himself, probably, more than is good for his health. The patient steed waits and waits, more quietly than the most faithful of human slaves. It shivers in the night air; its limbs become cramped with the cold. The wind gets up, as the owner, before a cheerful fire, mixes another glass and takes another cigar. Still the horse remains almost in the spot where it was placed. The perspiration which covered the body dries in the darkness; evaporation quickly chills the blood which violent exercise had heated. The pulse sinks; spasms creep over the frame —but there is none near to note them. In solitude and discomfort the most painful of maladies is imbibed: in due time it breaks forth, to the astonishment of the proprietor.

Another man rides far and fast through a heavy shower. He reaches a distant house and flings himself from the saddle, fastening the horse to the door-post. Cordials are ready for the man, and business is discussed over a glass. No one thinks seriously of the poor life fastened to the door-post. "The horse is wet and can take no harm." "The gallop home will warm it," and so forth. Therefore, the animal remains, to be drenched by the rain and to creep as near to the house as it may for partial shelter; the posterior part of the body, however, projects, and the drops fall, heavy and cold as lead, upon the loins of the patient beast. The blood loses its warmth and the limbs their elasticity. When the owner again crosses the saddle he may be jolly; but it needs both spur and whip to cause the dripping and frozen animal to move.

When tetanus originates from a visible wound, the horse is generally nervous from the first; although sometimes the appearance of the symptoms may be delayed from fourteen days to six weeks. But at whatever time displayed after accident—either noticeable, hidden, or systemic—they are similar: the horse fidgets in the stall and lacks the repose which usually sits so beautifully upon the sick horse's frame. It is excited at the approach of any person and, commonly, very obstinate when given physic. The wound may, nevertheless, be healthy. Sometimes, as the outbreak draws near, the wound may rapidly close, become morbidly dry, or, instead of pus, send forth only a foul and scanty serum. Instances are narrated of tetanus supervening upon mortification; but such reported cases are, in the horse, very rare. Commonly, the wound presents no appearance by which any man, however profound his knowledge, could guess the consequence to which it had given rise.

Tetanus is announced by an appearance of excitement. The tail is erect; the ears pointed forward; the head elevated; the legs stiffened and stretched out. This aspect of excitement is not temporary. The groom passes through the stable and the attitude is maintained. He wonders "what ails the horse?" It seems all alive; yet, though the groom shouts out, "come over," the order is obeyed with difficulty. The food is not eaten. It is picked and strewn about, but not devoured. When master returns home, the groom wishes he would "*just look*" at the horse. It is very

strange indeed! Why, the tail is quivering and the body feels quite hard—not like flesh. Hopes are expressed and the "veterinary" sent for. He proceeds at once to the manger, observing the animal as he approaches. With one hand he raises the horse's head. The haw is projected over the eye, and a case of tetanus is recognised.

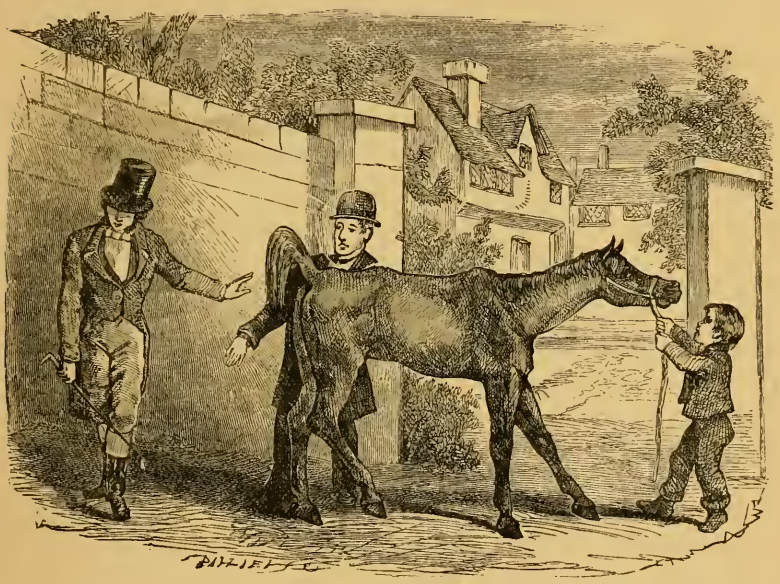


THE TEST FOR TETANUS, WHEN NOT FULLY DEVELOPED.

Most persons know what belly-ache and cramp are. Well, these are but spasms affecting different parts of the body: tetanus is spasm affecting every part of the body at the same time. The spasm is always present; but it admits of aggravation. Any painful operation, any sudden fright, or the slightest sound, will produce a paroxysm, during which the horse's body is fearfully contorted; and the animal writhes as it falls to the ground. Left alone, however, the horse may rise after some time; for nothing causes the quadruped so much dread as an inability to stand. It may totter or fall about, but it refuses to lie down, even though rest must be greatly needed and would act as the best of medicine. It stands day after day in the same spot. It does not move, as any motion may bring on one of those terrible paroxysms. The matter is rendered worse by the brain, during the entire period, being sensible. Every pain is felt, and the wretched animal has leisure to appreciate its agony. This is bad enough; but the torture is aggravated by the appetite of the animal not being dormant. Hunger still exists, and a sense of starvation augments the suffering. The jaw is closely locked. The creature cannot feed; but the presence of hunger is no supposition, for if a mash be held to the mouth, with a look of piteous gratitude, the liquid portion is often drawn through the closed teeth. Hunger frequently impels the horse to make a desperate effort. The jaws are forced a little way asunder; a morsel is seized between the incisors; mastication commences, but cannot be perfected. The agony attendant upon motion forces the famishing creature to desist; and the poor horse is often found with

a mouthful of hay firmly clenched and hanging from the mouth.

The animal may have been conspicuous for its beauty. The harmony of form may, in it, have been united to agility of limb. The creature may have been the pride of its proprietor; but a few days of this disease will work a mighty change. The limbs are moved with difficulty; the body has lost all its undulating grace; and the flesh has parted with its elasticity. The master in vain



SHOWING HOW FAR AN ANIMAL WITH THE DISEASE IS CAPABLE OF MOTION

seeks for the object of his admiration, in the painful sight which he then looks upon.

One peculiarity of tetanus is too marked not to be noticed. Persons have complained of the wooden appearance of the body; but, in severe cases, the height of the animal seems diminished and the length shortened. This appearance is more than the result of mere imagination. Many of the bones are divided by a fibro-cartilaginous substance: this substance force can compress. For that reason a man is shorter when he retires at night than when he rises in the morning. No weight, however, can act with the energy of

excited contractibility, and of that tetanus is composed: all the muscles are violently in action or energetically contracting. A single muscle, when excited, shortens to that degree, which moves some portion of the body; but, when the entire mass of muscles simultaneously contract, they compress the frame, as in a vice. The grace of the animal is lost; the height is diminished, and the length is lessened under so powerful and general an action.

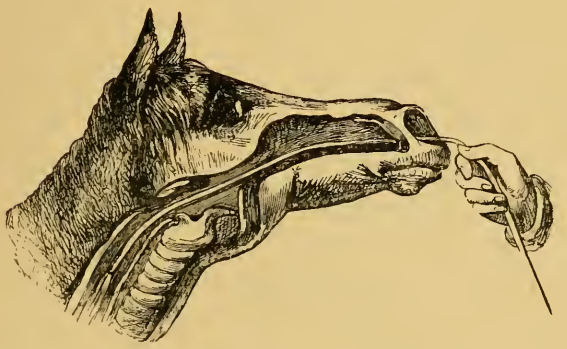
All kinds of treatment have been tried for tetanus, and it is said that each has resulted in success. The majority of these popular methods, however, are sheer barbarities; and if they were successful, they were so against probability. The plan at present adopted is much more humane: the animal's shoes are removed, that no sound may follow the tread, and a solitary shed is strewn with refuse tan. Food, in the form of an ample malt mash and a pail of thin gruel, is placed within easy reach. The shed must be approached but once daily—then by the man most accustomed to the horse; and he speaks soothingly as he nears the building to change the provender.

This species of treatment, when preceded by a large doze of purgative medicine, is usually successful. Mix four drachms of aloes or six drachms of aloetic mass, and four drachms of extract of gentian, with one scruple of croton ferina. This tremendous purgative may be confidently given, as everything during this disease depends upon the maintenance of quiet, and upon getting the bowels open.

As all people, however, may not live where solitude can be commanded, then give the purgative, render the room dark, and allow as few curious visitors as the pleading of sincerity cannot prevent intruding upon the sick and disabled quadruped. Pulling the animal about to administer medicine seems to do more harm than the most powerful drugs can counteract. Permit no blisters; sanction no firing: counter-irritants, however beneficial in other cases, are positive irritants when applied to a body nervously excited to the highest degree. Grant permission for no operation to be performed, as any person of ordinary imagination may picture the effect of bustle, followed by sharp pain, upon a creature which cannot endure even the slightest sound.

Should, however, the case last so long as to warrant fear of the life sinking through starvation, food may be given even in quantities.

Blood-warm linseed gruel should be procured—a gallon will be sufficient. The horse could swallow more; but after a prolonged fast there is danger in loading the stomach. Fix the horse catheter to the stomach-pump; then place the free end of the catheter in the nostril of the quadruped and push it forward, having previously slightly bent the end of the tube downward. Should the insertion provoke coughing, withdraw the catheter and commence afresh. Two feet of the instrument having disappeared, and no alarming symptom being present, begin to pump; do this as fast as possible,



THE MODE OF FEEDING A HORSE WITH CHRONIC TETANUS.

till the gallon of linseed gruel has been exhausted: such a resort is, however, better adapted to tetanus of the chronic description.

Medicines seem to have little effect. All endeavours should be to excite as little as possible a highly nervous and timid temperament like the horse; to reduce to inaction all the special senses by excluding from the sick box all noise and light, etc., by putting a shutter against the windows and by locking the stable door. Leave the patient by himself to quietude, as good nursing is of more avail than medical aid.

STRINGHALT.

Stringhalt is the imperfect development of that form of disease, which, in man and in dogs, is called chorea, or St. Vitus' dance. In dogs it jerks the whole body, even to the face. The lower jaw will continue moving and the eye twitching, while the animal is

prostrate and asleep. In the horse, however, it is seen only in the hind extremities. In the dog it will continue during progression, sometimes shaking the creature from its balance, and it often terminates in death. In the horse it is never fatal; and, save when about to start, is seldom to be detected. Then it causes the hind limbs to be quickly raised in succession. The movement is rapid, full of energy, and entirely involuntary. These motions over, the horse proceeds nor is the symptom usually witnessed

A HORSE HAVING STRINGHALT MUST MAKE SEVERAL INVOLUNTARY MOVEMENTS WITH THE HIND LEGS BEFORE IT CAN PROGRESS.

again till the animal has once more to start; although a few exceptional cases are on record where stringhalt was perceptible at every step.

Guilford, the racer, exhibited the disease in its worst form. In that animal stringhalt was present in such severity as prevented the signal being obeyed before the several eccentric movements had been performed. The horse was esteemed good for its purposes; but the ground lost at starting gave away its chances, and it was consequently sold. From the pampered stable of the race horse, it descended rapidly through various grades until the

creature came to be harnessed to a London omnibus. While in that position, the disease was so aggravated that the pastern used to hit violently against the belly, till the hair of both was partially removed by the repeated blows. The Society for the Prevention of Cruelty then purchased the miserable carcase for £3, and had the life and the suffering extinguished.

The body was given to the Royal Veterinary College for dissection. Professor Spooner relates that he found blood effused on the sheath of the sacro-sciatic nerve. This, however, must have been an accident produced by the death struggle: that nerve moves the flexor muscles. Stringhalt is the disease of the extensor muscles only; therefore, the condition of the nerve alluded to by Professor Spooner could in no way influence the motions of the limb. Messrs. Percivall and Goodwin both appeal to instances, where, in animals affected with stringhalt, pressure existed upon the posterior portion of the spinal column. The last observation accords much more with the writer's notions of cause and effect.

Nevertheless, the inexperienced reader may ask, How can the posterior portion of the horse's spinal column become affected? Of all the vertebræ, those of the lumbar region are endowed with the greatest motion, and consequently are the most exposed to injury. The uses to which man puts the animal are not so very gentle, but a delicate structure, however deeply seated, might be hurt. However, grant all these are harmless, which is indeed to allow a great deal to pass, the stables are enough to provoke stringhalt in half the horses now resident in London. Has the intelligent reader visited these places? He knows the holes in which poor humanity is obliged to stive. Well, any place not good enough for a man to live in is esteemed luxurious lodging for a horse. Many of the places are undrained; frequently have light or air admitted only by the doorway, and the stalls are seldom more than 4 ft. wide. The wretched captives cannot turn their bodies round in the allotted space. A horse being in, when wanted abroad, must be backed into the gangway, and thus made to "face about." It is not creditable to human nature when we perceive its most valuable and willing servant is begrudged the space in which its useful body rests. The labour of the day should at least earn for the horse a sufficient bed. Too much

cannot be said against the evils resulting from the use of narrow stalls. They are too small for a horse to rest in comfort within them, and the injuries they give rise to are innumerable; the continuous standing in a restrained position interferes not only with the general health of the animal, but also stunts the growing capacity of the young horse; the head always being haltered to the manger is an incentive to crib biting. It certainly is marvellous that men who know, equally with the writer, how horses should be housed and treated in health have so long condemned them to lie upon beds too narrow to give accommodation to their outstretched limbs, and too small for them to turn round in without risking some slight or severe accident.

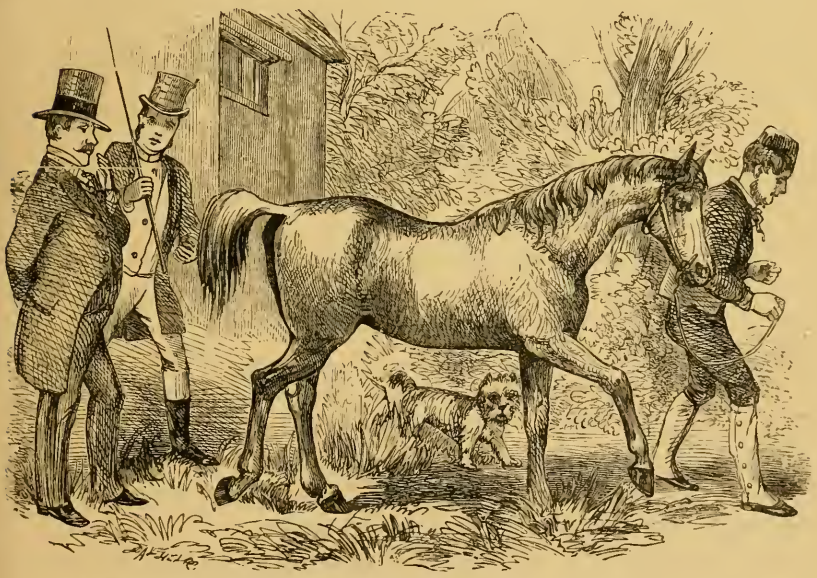
The exhaustion of the toil—for man has nicely calculated the work a horse can perform, and generally exacts the quotum to the full—has merited the night's repose, which shall fit for the morrow's fatigue; but man is most particular in all that concerns the quadruped. He has reckoned up the food it may eat, the water it may drink, the space it may occupy; the keep, the keeper, the lodging, and the very harness that fastens it to the load,—all are precisely calculated. There is no law to interpose between man and horse, even should the estimate be run "too fine." Against sore shoulders there is some enactment, which is only enforced through a constable specially retained by a private association. No clause teaches man his duty towards his inferiors. The lower animals have no protection against the exhausting labour and inadequate provision that maims a body or wastes a life.

The servant, observing the master to be without feeling, apes his better. A bad example always finds plenty of imitators. The horse may be wanted in a hurry; the groom commands it to "come round." It is too much trouble to back the animal as usual; the master is in haste and the servant has no time to lose. The poor animal endeavours to obey; it squeezes and twists its body: the head is seized, a blow is given, and the difficulty is vanquished. But at what a cost! One bone of the spine has been injured. Bone is slow in its developments. No immediate consequence results. But months afterwards the injured place throws out a spiculum of bone, no larger than a needle's point, perhaps, but it presses upon the spinal marrow, and lasting stringhalt is the effect.

Of course no drug can reach the part affected; no cunning preparation can remove even a needle's point from the interior of the spinal canal. The stringhalt, once exhibited, is beyond cure, and never disappears but with the life. However, it mostly affects high-spirited, nervous horses, some of which are fine movers, and fast; and as they do not exhibit this eccentric action markedly during rapid locomotion, they often sell for large sums.

PARTIAL PARALYSIS.

Paralysis in the horse, save when it appears towards the termination of violent disorders, is never more than partial. It



THE UNSTEADY WALK OF A HORSE WHEN SUFFERING UNDER PARTIAL PARALYSIS OF THE HIND LEGS.

locates itself in the hind limbs, and, though it does not destroy all motion, yet it destroys all strength or utility. The power to move with speed is entirely lost, nor is the ability to progress at a slower pace by any means assured. One hind foot is perpetually getting in the way of the other, and consequently threatening to throw the animal down, whose walk already is rolling or unsteady.

This affection is the property of matured animals: so rarely as to be exceptional is it to be seen attacking colts. Fast trotters, omnibus horses, hunters, and creatures subjected to extreme exertion, are most liable to it. It creeps on insidiously. At first the pace is as fast as ever; but something is suspected wrong in the manner of going. After a time the creature is brought to a veterinary surgeon as a lame horse. The suspicions are then destroyed and the real malady is announced.

The decay of the more showy powers seems to bring forward the gentler qualities of the horse's nature. The animal, which once was dangerous, loses all its dreaded attributes: with paralysis, it becomes meek or tame, as though the big life felt its great affliction and sought to compensate, by amiability, for the trouble it necessarily gave, or in other words, that the animal was mildly pleading for existence. No doubt much of such a sentiment, if not all, resides in the mind of the spectator, the animal only being subdued by sickness. Still, it is very sad to contemplate the horse, which once could outstrip the sparrow in its flight, reduced to a pace which the tortoise might leave behind; to behold the beast, once powerful and proud of its strength, humbled to a feebleness which the push of any child might overthrow. It is more sorrowful, when we think its hurt was received from him to whom its welfare was entrusted; that its injury was the consequence of an over anxiety to please and to obey. It may well be doubted whether, when man was given dominion over the beasts of the field, he was invested with an absolute authority over God's creatures, which had no moral duties nor any obligations attached to it. At all events, it would be difficult to find an object more suggestive of pity, or better calculated to excite our inward reflections, than a horse suffering under partial paralysis.

Paralysis is generally past all cure; occasionally, however, it admits of relief. It is an eccentric disorder, and it is difficult to say, positively, what medicine will be of use. The horse, however, during paralysis, should enjoy absolute rest. In its disabled state, a little walk is as great an exertion as once was a breathing gallop; and it was over-exercise which induced the disorder. The animal should receive only strengthening physic and the most nourishing of food. The following ball should be administered, night and morning:—

Strychnia—half a grain, gradually, or in six weeks, to be worked up to a grain and a half. Iodide of iron—one grain. Quassia powder and treacle—a sufficiency: to be given night and morning.

Friction to the body is all important, as it generates electric action, and for this reason grooming should be persevered with, the animal being carefully dressed twice each day, and the process ending by dressing the quarters thoroughly with a hard brush. The bed should be ample; the box should be padded, and a warm cloth always kept over the loins. A piece of wet flannel, covered with a rug, placed over the lumbar region, has on occasions induced a return of warmth. The bowels should be regulated, if possible, with mashes and green meat; but, when costiveness exists, a pint of oil is to be preferred to even three drachms of aloes. The one exhausts, the other nurtures as well as relaxes the body. The application of electricity to the affected parts, or to the body generally, has been applied with wonderful effects to the human subject, and so it has to our domestic animals; but the importance of its curative or more properly its restorative influence on nervous tissue has not as yet been sufficiently recognised so as to insure its more universal adoption in the treatment of diseases common to the lower animals.

The hope of amendment must, however, be indulged with caution. The disease is of chronic growth, and therefore will be of long duration. At all events, it is not one horse in four which recovers from an attack of partial paralysis; and not one in twenty that is afterwards fit for its former uses.

GUTTA SERENA.

Gutta serena is fixed dilatation of the pupillary opening, owing to paralysis of the optic nerve; the affection is, consequently, accompanied by permanent blindness.

The causes of this malady are blows upon the head, quick driving, excessive hæmorrhage, stomach staggers, unwholesome stables, poor food, exhausting labour, or anything which may decidedly undermine the constitution.

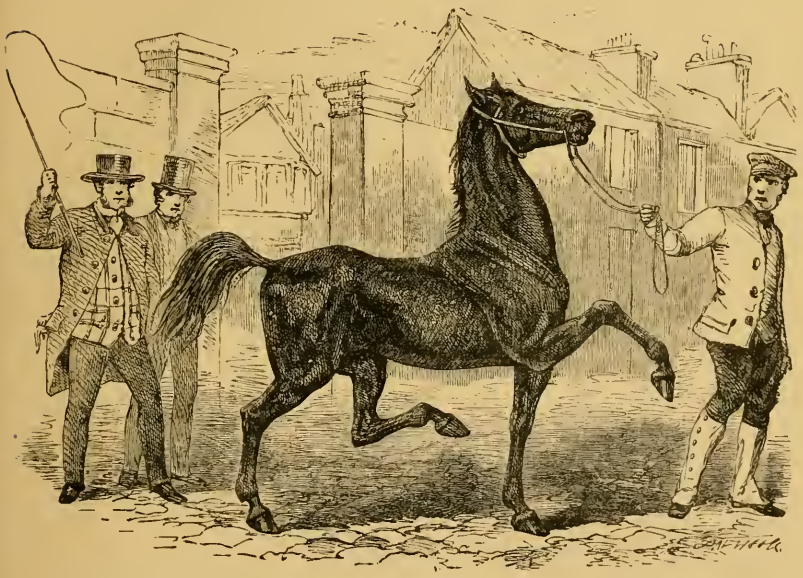
The majority of these causes are inflicted by man, the remainder are within his control. Any person has but to reflect how very precious eyesight is to mankind. Having settled that

point, he has only to conjecture how much more dear it must be to a creature forbid to enjoy the pleasures of conversation. To take away sight, is to deprive the animal of a faculty with which it is endowed to perfection, in some measure to compensate for the absence of reason and the deficiency of speech. A horse can see further than its master. The human eye is frequently dormant, when the thought is active; the healthy, equine eye never rests. The creature sleeps so lightly that very seldom is it caught napping. We may imagine, therefore, the gratification bestowed by an organ so constantly employed. To blind a horse is to deprive a breathing body of half its life's pleasure. It is more, when we consider the natural disposition of the quadruped: it is to deprive timidity of its watchfulness, fear of its protection. It is even yet more, when we think upon the habits of the horse; —its spirits, its pleasure, its joy—all are expressed by means of a gallop. But what speed can the horse indulge in, when cruelty has taken away the power to guide with rapidity? To destroy the horse's sight is to condemn a creature to live on, but to take from life the gaiety of existence.

The eye recently afflicted with gutta serena, or rather the eyes (for this deprivation commonly affects both orbs), is, to the uninformed inspection, perfect. The internal structures are in their proper places, and the pupil is beautifully dilated. A very little instruction, however, enables the spectator to distinguish between fixedness and dilatation. A trifle more tuition will point out that the pupil is not so dark as in the organ of the healthy animal; that it has an opaque milky cast, accompanied very frequently with a bright light green shining through it, as though a piece of tinsel were within the posterior chamber. After gaining such information, probably the notion before expressed about beauty may be changed. Most things are most beautiful as nature formed them, and no little expression resides in the ever-changing dimension of the pupillary opening.

AN EYE AFFECTED WITH GUTTA SERENA.

The symptoms of blindness are equally pathetic and characteristic. The nostrils are constantly at work, and the ears perpetually in motion—life is endeavouring, by exercising other senses, to compensate for the one lost. Then, the movements are peculiar. A blind man commonly shuffles along, endeavouring "to feel" his way. The horny hoof lacks the human faculty, but the horse endeavours to surmount objects by stepping high. A blind man turns the sightless face heavenward; the animal,



THE MODE IN WHICH A HORSE, WHEN QUITE BLIND, PROGRESSES.

likewise, raises its head in a similar manner; but this is done in order that any near or approaching object may be avoided by the faculty of hearing, which is more acute and intense in the blind than in those possessing this faculty. The sightless horse can hear the wind passing by the stump of a tree, and will avoid it owing to this indication alone; and other signs give evidence that with loss of sight the power of hearing becomes greater, and the other senses more keen; and the horse, in order to gain a better chance of hearing, elevates his head and pricks his ears from side to side so as to render him more capable of recognising

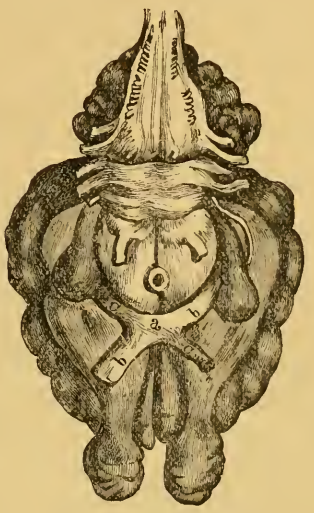
approaching objects. There is another strange peculiarity, also, exemplified by the blind horse. The sightless quadruped, contrary to the majority of its species, generally carries a rough coat in summer and a blooming coat in winter. The cause of this peculiarity is involved in mystery, although many reasons for it have been assigned. There is no doubt that the loss of sight affects the brain, which is always acting for the benefit of every living tissue; and this impression is conveyed throughout the nervous system, which, influencing the skin, causes the existence of a long coat during the summer and a short glossy one in winter, but in what way it is impossible to explain. The late Mr. William Mavor, one, if not the most eminent veterinary practitioner of the century, was of opinion that the long coat was given as a protective against the ravages of flies which were so prevalent during the hot months, which a horse, with sight, could have avoided, but without was unable to escape from. During the winter, flies not being in existence, the long coat was not needed; and Nature being bound to make arrangements for two coats, one at the spring and another at the fall, gave the blind horse a long one during the warm period, and a short during the cold.

Now, a high stepper, a well-carried head, a lively ear and a blooming coat, are great points in a horse, especially about London, and with gentlemen of little information. To prevent imposition, always place the horse in a full light. Should the pupils continue large, have the horse put into a dark house. A quarter of an hour afterwards, take a candle, and by its light regard the eye. If the pupil is still dilated, hold the candle near to the eye. The iris will not contract quickly upon artificial light, but in five minutes it ought to move. However, suppose you imagine it to remain stationary; then, placing yourself by the head, have the horse led out into sunshine. If it exhibit no change to mark the passage from darkness to daylight, you may certainly conclude the optic nerve is paralysed.

There are other tests, but these are not satisfactory; such as covering the eye with the hand or a hat. The hand is semi-transparent, and so can only induce partial darkness; the hat does not fit the inequalities of the horse's countenance, therefore it is useless. Of the same nature is aiming pretended blows at, or moving the hand before, the suspected eye. The other senses,

by constant exercise, become so very acute during loss of sight, that winking is no proof of vision: the lid may move, and, nevertheless, the horse be stone blind.

Nothing can be done for paralysis of the optic nerve. The injury once established, its effects are lasting. Butchers and other people, who foolishly pride themselves upon their fast trotting steeds, and whose natures are not unpleasantly susceptible, often induce the affection. It lessens the value of the horse, dooms it to a lower class of proprietors, and takes from the creature's life much of the pleasure which otherwise might lighten the animal's existence.



THE BASE OF THE BRAIN.

a. The point of junction between the right and left optic nerves.
b b. The healthy optic nerve, of a white colour, originating on the right side and proceeding to the left eye.
c c. The paralyzed or unhealthy optic nerve, diminished in size and darker in colour. It ran to the left eye; but its diseased condition can be clearly traced to originate from the right side of the brain.

After death, an anatomical peculiarity is observed. The optic nerves, subsequent to leaving the brain, unite and exchange fibres. Neither nerve pursues an absolute course; yet, consequent on decease, if the right eye were blind from gutta serena, the left nerve, or the nerve originating from the left side of the brain, alone is affected: the disease seems confined to that part. The opposite nerve is perfectly white and healthy; but the one affected with paralysis is of a yellowish colour, softer nature, and sensibly diminished in bulk. So, if blindness afflict both eyes, both optic nerves are then of diminished size and of a yellowish hue.

CHAPTER II.

THE EYES—THEIR ACCIDENTS AND THEIR DISEASES.

SIMPLE OPHTHALMIA.

THE following engraving illustrates some of the accidents which attend upon injured sight in the horse. The eyes are probably more important to the safety and pleasure of the master than any other portion of the quadruped's frame. Let the smallest impedi-

SOME OF THE RESULTS OF IMPERFECT VISION.

ment exist, and there is no telling in what way it may operate. Certain horses are most affected by near objects; others exhibit alarm only when bodies are approaching them; another class of creatures will look upon most forward sights with indifference, but will invariably be horror-struck whenever the view is extensive; while a fourth group will shy violently without mortal vision being able to recognise any cause for terror. In every case the dread

excited overmasters all other feelings. The presence of extreme fear releases the horse from the dominion of its proprietor; its movements are sudden, jerking and eccentric; the animal has lost all self-control, and there is no saying in what direction it may move, or what it may attempt to do. It is regardless of its own life, therefore it is careless about the welfare of others, and he is very fortunate who possesses such a servant and escapes without accident.

There is no cure for a disposition depending upon a change of structure; but there may be a preventive. Would all horse-owners preserve their tempers and forbear from slashing a horse over the head, they would be vast gainers in a pecuniary sense, and would certainly escape very many of those ills now commonly attendant upon equestrian exercises.

Simple ophthalmia is inflammation of the fine membrane which covers the horse's eye; it reaches no deeper, it does not affect the internal structures of the organ, and it is not so much to be dreaded in its immediate as in its after consequences. It is caused by accident and by the violence of man.

As the reader has walked the streets, he surely must have seen men indulge their temper by cutting a horse over the head with the whip. The animal capers about and shakes the ears, endeavouring to avoid the chastisement; the man becomes more enraged; the reins are pulled tight, while the master stands up in the gig, and for minutes continues chastising a creature that is bound to the shafts and comparatively at his mercy. Were the horse, thus tortured, to run away, the person who abused his authority would have provoked a severe retribution; but the animal has no such intention. The fault may be far more imaginary than real. The timidity of the horse prevents it from wilfully inviting the dreaded lash; possibly the offence resides more with the individual invested with trust over life than with the creature that patiently submits to most unworthy control. At all events, the thong curls about the face; now it cuts the lips, in which the sense of touch resides; the pain is maddening, the horse capers and shakes its head, striving to avoid a repetition of the torture. The next slash, however, turns sharply round the blinkers and lights upon the eye; the horse is held tight, the man feels happy, he has discovered a tender place; the whip is plied again and again, always falling true. It hits the

mark. When the animal reaches home, the lid of one eye is closed, and many tears have wetted the cheek, while scars remain after the immediate consequences have passed; the vision is interfered with, and timidity becomes an inveterate shyer.

Also, from the manner in which the rack is placed, a hay-seed frequently falls into the eye. The hay is always kept in the loft above the stables, and a narrow trap-door opens into the rack. This is very convenient for the groom; how could any architect be so very "maudlin" as to design a stable with the slightest consideration for a horse? At every mouthful the head has to be raised and the provender pulled out. Probably human ingenuity could not invent a machine more likely to be attended with injury. The head uplifted, the eye open to direct the bite, the dry grass shaken to pull out the morsel, of course the loose particles are dislodged, and what wonder if one of the hay-seeds should fall into the open eye? This body is small, dry, harsh and sharp. Moved about by the motion of the lid it commits fearful ravages upon the tender organ to which it has found admittance, and simple ophthalmia is the consequence.

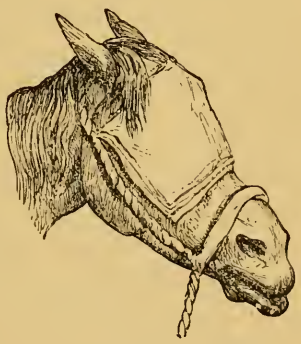
Man is too proud to learn from nature, or he might observe horses always depress their heads when in the field. The common parent, with care for all her children's comfort, makes the animal stoop to crop the herbage; man causes the creature to upraise and outstretch the neck to reach its sustenance. However, the horse is not always free from accidents when it quits the stall. Carters often amuse the weary way by striking what they term a "stubborn and foolish horse" over the head with the butt-end of the whip. This action, though most irritating to witness, is generally less important in its results than any of the injuries previously remarked upon. The lid shields the eye; consequently, a largely swollen covering and a slightly injured membrane are the consequences.

Many brutal drivers have "a happy knack" of kicking at the head of a fallen animal to make it rise. This act may extinguish vision or provoke simple ophthalmia; but it is hoped all such are exceptional cases, therefore these are willingly not remarked upon.

Frequently horses try to while away the long hours of confinement by playing with one another; one horse will lean its head

over the division to the stalls, and for hours together lick its fellow-prisoner's neck. Sometimes a day's rest begets high spirits, and the animals indulge in a more boisterous amusement; they bite and snap at one another's heads. Domestication has, however, disabled the creature to nicely measure distances. Standing all day long with the nose close to a glaring white wall has probably impaired the vision. One horse projects its teeth too far; they simply graze the eye; but a small flap of membrane is the consequence. The bite of an enraged horse is fearful; and were not the animal gently inclined, more than a minute portion of fine skin would testify its intention. Simple ophthalmia, accompanied with a small abscess upon the cornea, is the result.

The treatment of simple ophthalmia is somewhat homely. Put on a bridle or a leather head-stall—or a halter will answer the purpose; fasten a cord loosely to either side, so that it may cross the forehead. On this line suspend a cloth several times doubled; but mind it is large enough to cover both eyes, for the visual organs are so sympathetic that, when one is inflamed, the other is very likely to exhibit disease. Keep the cloth continually dripping with the following lotion:—

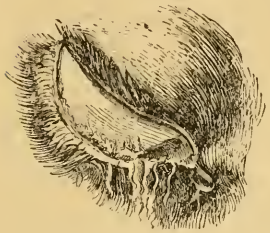


A READY MODE OF BLINDING A HORSE, AND OF APPLYING A LOTION TO THE EYES IN SIMPLE OPHTHALMIA.

Fill a two-quart saucepan with poppy heads, cover these with water; boil till the poppy heads are quite soft, pour off the liquor, strain, filter, and, adding thereto one ounce of tincture of arnica, the preparation when cold is fit for use.

On the first morning, an inspection should be gently attempted; for the eye is generally so very tender, and the animal so resistful, that no examination at that time is generally satisfactory. On the following day, however, the lotion will have reduced the swelling, mitigated the agony, and have enabled the horse to be more obedient; then make another and a thorough examination. The skin upon the eye will be white and opaque, the lining of the lid inflamed, while numerous tears will pour down the cheek according to the severity of the injury. Remove any substance found

underneath the eyelid. If the hay-seed or sharp particle shaken from the provender stick firmly into the outer covering of the eye, grasp it tightly with a pair of forceps, and endeavour to pull it out. Should it be fixed too deeply for any ordinary force to move it, do not exert all your power, but take a sharp-pointed knife, which is better than a lancet, because more under command, and placing its tip below the obstacle, with a motion of the wrist oblige it to quit its situation or to come forth between the ends of the forceps.



AN EYE RECENTLY AFFECTED WITH SIMPLE OPHTHALMIA.

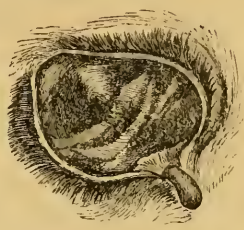
Should a flap of the cornea be left by a bite, probably pus will be secreted beneath it; the place must be watched till the local inflammation has subsided, and a spot of yellow, opaque matter can be detected under the transparent membrane. With a slight incision the pus must be released, and the eye bathed with a lotion composed of water and chloride of zinc, one grain to the ounce.

Other cases will rather be known by the variety of marks left behind than by any difference in their necessary treatment. A lotion is generally everything required; however, should the inflammation become excessive, it may be necessary to open the eye-vein or the vessel which, journeying towards its larger trunk, runs directly beneath and from the eye. When this prominent and visible vein is pierced, it frequently, although distended, will not bleed. Then place some favourite food upon the ground—the bending of the head and the movement of the jaw will cause the current to flow forth freely.

It is among the most beautiful attributes of the horse that, though so very timid, it never suspects nor can it understand actual injury. Thus, the flowing of its own blood does not affect it; it is otherwise with other animals not more intelligent. If a dog or cat be hurt, no delicacy can tempt the creature to feed. The horse, when in battle deprived of its limb, is so accustomed to restraint and so unsuspicious of harm, that it has been found, after the strife was ended, maimed, and yet cropping the herbage about it. The generous beast, when domesticated, retains its gentle disposition, and soon forgets to recognise danger; it becomes attached

to its superior, and though its treatment be coarse and its usage brutal, it can pardon all.

The consequences of simple ophthalmia are little, white, opaque spots upon the membrane. Streaks of the same sort are occasionally left upon the organ by the abuse of the whip; the amount of blemish, of course, will be decided by the original injury. Never purchase an animal thus disfigured; better buy a blind horse. The opaque places prevent many rays of light from reaching the optic nerve; the sight is irreparably impaired; the horse sees imperfectly; it may behold the head of a man, while the opaque scar conceals the body. Timidity takes alarm at the apparently spectral object. It has no reason to explain, and it wants intelligence to understand. The poor abused quadruped becomes a dangerous shyer.



HORSE'S EYE INJURED BY THE LASH.

SPECIFIC OPHTHALMIA.

Before we touch upon the subject which forms the heading to this article we wish to establish one proposition, because it will smooth the way to an understanding between author and reader.

Man cannot make a property of life; he has no power over its continuance; it may cease to-morrow without his permission and against his wishes; it is removed from and independent of his control. Man can have nothing like a property in that which is altogether above his sway. He then, obviously, has no right to enslave any living creature, and take no care of the existence which he has deprived of liberty to provide for itself. When he captures a wild animal and retains it in captivity, he entails upon himself the duty of providing for its wants, and becomes answerable for its welfare. He violently usurps nature's province—obviously, he adopts nature's obligations; if he rebel against such a moral contract, and persist in viewing dominion as absolute authority, as something which invests him with power to feed or starve at his pleasure, house or turn into the air according to his will, nature opposes such arrogance, and, releasing the life by

death, takes the oppressed creature from the tyranny of the oppressor.

Under some such compact the horse is given to man. The implied, not written obligation, may not be acknowledged or understood; but, nevertheless, it exists, and the terms of the bond are rigidly exacted. Let us regard this matter in relation to specific ophthalmia. A gentleman possesses five horses; he builds a stable twenty feet long, twelve feet wide, and nine feet high; into this place he crams the five huge lives. We will suppose the place to be good of its kind, to be paved with Dutch clinkers, and to be perfectly drained. Still, each horse stands in a stall five feet wide; in this it has to remain all night and the major portion of the day. In this space it it has to relieve its body; the liquid, to be sure, may run off by the drain, but it has to fall upon straw, which imbibes some, and to flow over bricks, which absorb more; the solid excrement is during the day removed by the groom as it falls, but it remains in an open basket to taint the air of the place. We will suppose the horses and their attendants, occasionally, are the sole inhabitants, and the building contains none of those things, living and otherwise, which ladies are pleased to order should "be carried into the stable."

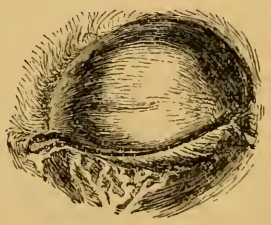
THE SPECIES OF EYE WHICH IS GENERALLY SUPPOSED TO BE MOST LIABLE TO OPHTHALMIA.

Will the sane reader assert that the space is large enough for its purposes? The stable never can be sufficiently ventilated: it will smell of impurity; of hay, straw, oats, ammonia, and of various other things. The air feels hot. Can it be wondered at? Ten large lungs have been breathing it for weeks and years, during twenty out of every twenty-four hours. Five huge creatures have been cabined there, living by day, sleeping by night, feeding and performing all the other offices of nature. Is it astonishing that the air feels and smells close? Ought we not rather to wonder that animal life can exist in such an atmosphere? The chief contamination is ammonia; ammonia will not support vitality. The reader has inhaled smelling salts; those are purified carbonate of ammonia; have these not made the eyes water? The ammonia of

the stable affects the eye of the horse; it also undermines the constitution; but by constantly entering upon the lungs and stimulating the eyes, it causes the constitutional disease to first affect the visual organs—in short, specific ophthalmia is generated.

Now, to prove the case here stated. In the south of Ireland, where poverty prevails, humanity is obliged to shelter itself in strange places, and any hole is there esteemed good lodging for a horse. In that part of the kingdom ophthalmia affects the majority of animals; it not only preys on horses, but it seizes upon mankind, for the author, a few years ago, was much struck by the quantity of blind beggars to be encountered in the streets of Cork. Numerous instances could be cited of ophthalmia having occurred, not only to the horses, but to the grooms who have attended them in the same stable; the disease in the one and the other having originated from the same cause, namely, imperfect drainage and ventilation. Here we have the conclusion of the argument—its moral exemplified and enforced. If animals are foully housed and poorly kept, they generate disorders, which at length extend to the human race; therefore, he who contends for a better treatment of the horse, also indirectly pleads for the immunity of mankind from certain diseases. Man cannot hold life as a property, or abuse life without his ill deeds, by the ordinances of nature, recoiling on himself.

Specific ophthalmia is a constitutional disease affecting the eyes; it has been submitted to all kinds of rude treatment; no cruelty but has been experimented with; no barbarity but has been resorted to. It has been traced to various sources; its origin has been frequently detected; but the real cause of the disease, to this day, has not been recognised. The veterinary surgeon is often sent for to just look at a horse which "has got a hay-seed in its eye." This mistake is very common, as ophthalmia generally breaks forth during the long night hours, whilst the stable is made secure and the confined air is foulest. The groom sees an animal with a pendant, swollen lid, and with a cheek bedewed by copious tears; he can imagine only an accident; but the medical examiner

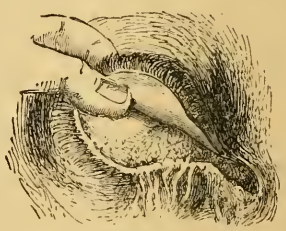


THE FIRST APPEARANCE OF SPECIFIC OPHTHALMIA.

must obey the summons with an unprejudiced mind, because simple ophthalmia is a mere misfortune, specific ophthalmia is a constitutional disorder.

The veterinary surgeon, firstly, in the groom's convictions, makes a grievous mistake. He goes up to the horse on the opposite side to the affection; being there, he takes the pulse, remarks the breathing, observes the coat, feels the feet, examines the mouth, and looks at the nasal membrane. If simple ophthalmia be present, some of these may be altered from long endured pain; but if specific ophthalmia exist, the general disturbance denotes a constitutional disorder. The pulse is hard, the breathing sharp, the coat staring, the feet cold, the mouth clammy, and the nasal membrane inflamed or leaden-coloured.

The horse is next ordered round to the stable window, with the diseased eye towards the light. A pretence is then made of forcing the lid open; if simple ophthalmia be present, the resistance is energetic, but not violent. Should specific ophthalmia be the affection, the horse struggles against the intimation with the wildness of timidity, striving to escape a terrible torture. The animal is, thereupon, brought into some shady corner; its fears are allayed, and it permits the lid to be raised with little difficulty. Should the eye have been injured by an accident, the most prominent part of the ball is likely to be hurt. The internal structures are unaffected; the



RAISING THE UPPER LID OF AN EYE AFFECTED WITH SPECIFIC OPHTHALMIA.

DIAGRAM OF THE EYE IN SIMPLE OPHTHALMIA. THE DARK LINE INDICATES THE EXTENT TO WHICH HAW MAY PROTRUDE.

DIAGRAM OF THE HORSE'S EYE WHEN SUFFERING FROM SPECIFIC OPHTHALMIA.

pupil generally is larger than usual, and the iris is unchanged. The haw may be or may not be projected; but the colour, form, and

aspect of the iris is unaltered. During the commencement of specific ophthalmia the centre of the cornea may be transparent, but the circumference of the ball is violently inflamed; the reason being that a constitutional disorder always first attacks the more vascular structures, and therefore commences in the loose conjunctiva, covering the white of the globe. In specific ophthalmia, the colour of the eye has changed to a lighter hue, and the pupillary opening is firmly closed, to prevent the entrance of the dreaded light.

Weakness increases as specific ophthalmia progresses. The attack, however, is seldom stationary; the eye first involved may suddenly become clear and healthy; and the opposite organ may exhibit the ravage of the disease; thus, the affection keeps rapidly moving about; when it suddenly quits both eyes, the inflammation commonly fixes upon some distant part of the body, as the lungs or feet. No one can predict how short will be its stay or how long the attack may last; it has disappeared in a week, it has continued two months. It seldom reaches its climax during the first assault. It will occur again and again; generally it ends in the destruction of one or both eyes. Like scrofulous affections in the human being, which it greatly resembles, it generally is the inheritance of youth; after maturity, or after the eighth year has been attained, it is rarely witnessed.

When this terrible affliction visits a stable, let the proprietor firmly oppose all active measures. A shed ought to be procured, cool or shady, and screened on every side, excepting on the north. Every hole, however minute, should be stopped, because light shines through a small opening with a force proportioned to its diminutiveness. The stars and candles in the once popular London Diorama were only small holes cut in the canvas.

The eye-vein is then to be opened, and the lid, if much enlarged, punctured in several places; when the bleeding has ceased, a cloth, saturated in cold water, is to be put over both eyes. As to other remedies, they must be regulated by the condition of the animal. Should it be poor, oats and beans, ground and scalded; cut green-meat; gruel made of hay-tea, etc., should be given. No dry fodder must be allowed; all the provender must be so soft that mastication may be dispensed with.

The movement of the jaw, sending blood to the head, is highly injurious during an attack of specific ophthalmia.

Let the following ball be given twice daily:—

Powdered colchicum . .	Two drachms.
Iodide of iron	One drachm.
Calomel	One scruple.

Make into a ball with extract of gentian.

As soon as this medicine begins to take effect, which it will do soonest upon the weakly, change it for—

Liquor arsenicalis . . .	Three ounces.
Muriated tincture of iron	Five ounces.

Mix, and give half an ounce in a tumbler of water, twice daily.

Do not bother about the bowels, endeavour to regulate them by mashes and with green-meat; if they should not respond, do not resort to more active measures. Should the pulse be increased, a scruple of tincture of aconite root may be administered every hour in a wine-glass of water; should the pain appear to be excessive, the like amount of extract of belladonna may be rubbed down in a similar quantity of water, and be given at the periods already stated; only always be content with doing one thing at a time. Thus, reduce the pulse, for, with the lowering of the vascular action, the agony may become less intense; however, so long as the beats of the artery are not more in a minute than sixty-five, and not very thin or hard, the aconite should be withheld, for during an acutely painful disorder the heart must be in some degree excited.

The grand measure, however, remains to be told. Remove every horse from the stable in which the attack occurred; then elevate the roof, widen the gangway, and enlarge the stalls; improve the ventilation, overlook the drains, lay down new pavement, in fact, reconstruct the edifice. It is felt, that in giving these directions, a proposal is offered to demolish a building. The author is fully alive to the expense of such a transaction; but one valuable horse will pay for a great deal of bricks and mortar. Experience has decided that the most humane way is, in the long run, the cheapest method of proceeding. Ophthalmia

is a teasing and a vexatious disorder. If the owner has no feeling with the inhabitants of his homestead, still, let him study his own comfort, for it is astonishing how very much good stabling adds to the appearance and to the happiness of a mansion.

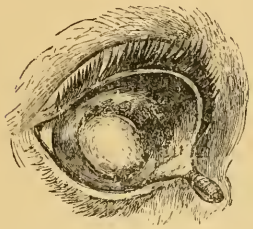
Specific ophthalmia does not terminate in death; it usually leaves the victim blind in one or both eyes. In England, however, it is mostly satisfied with the destruction of one organ; the strength of the other becoming, after its departure, considerably improved. At the same time, having caused the lids to swell, it leaves them in a wrinkled or a puckered state; the remaining eye is likewise somewhat sensitive to light. To gain in some measure the shadow of the brow, and to escape the full glare of day, the eye is retracted; all the muscles are employed to gain this end, but the power of the levator of the upper lid causes the eye to assume somewhat of a three-cornered aspect.

It is always desirable to recognise the animal which may be or may have been liable to so fearful an affection. One symptom of having experienced an attack is discovered on the margin of the transparent cornea. The inflammation extends from the circumference to the centre. The margin of the transparent ball is generally the last place it quits; here it frequently leaves an irregular line of opacity altogether different to and distinct from the evenly-clouded indication of the cornea's junction with the sclerotic, which last is natural development.

AN EYE, DISPLAYING THE RAVAGES OF SPECIFIC OPHTHALMIA.

Nevertheless, the internal structures best display the ravages of specific ophthalmia; it is upon these the terrible scourge exhausts its strength. The eye becomes cloudy; loses its liquid appearance; the black bodies attached to the edges of the pupillary opening, either fall or seem about to leave their natural situation. The pupil becomes turbid, then white; the iris grows light in colour, and at last remains stationary, having previously been morbidly active. The whiteness of the pupil grows more and more confirmed, and every part grows opaque; by this circumstance, the total cataract, arising from specific ophthalmia, is

frequently to be challenged. The lens, moreover, is often driven by the force of the disease, from its position; it lodges against the inner surface of the globe. Very common is a torn or ragged state of the pupil witnessed, as was stated, during the intensity of the attack, the iris contracts to exclude the light; remaining thus for any period, it becomes attached to the capsule of the lens; when the disease mitigates, it often rends its own structure by its efforts to expand. Should those efforts prove unavailing, the pupillary opening, as sometimes happens, is lost for ever.



TERMINATION TO SPECIFIC OPHTHALMIA.

In the previous description of disorder no mention has been made of the cartilago nictitans, or haw, or third eyelid, as it has been called. This thin body is very active, and resides at the inner corner of the eye; of course, in a disease under which the eye is pained by light, the haw is protruded to the utmost. In ophthalmia, however, it is covered by an inflamed membrane, and though in health its movements are so rapid that it may easily escape notice, yet in this disease it lies before the eye, red and swollen; this substance it was once common for farriers to excise, under a foolish notion of removing the cause of the disorder.

The use of the cartilago nictitans in the healthy eye will now be explained. Let the reader inspect any of the illustrations to this article; he will find the outer corner represented as being much higher than the inner corner of the eye, where the active little body resides. Under the upper lid, near to the outer corner, is situated the lachrymal gland, which secretes the water or tears of the eye.

Suppose any substance "gets into the eye," being between two layers of conjunctiva, it creates much anguish, it provokes constant motion of the lid, which in its turn causes the lachrymal gland to pour forth its secretion. Liquid flowing over a smooth globe of course gravitates; the substance "in the eye" is thus partly washed and partly pushed towards the inner corner.

Now, the base of the cartilago nictitans rests upon the fat at the back of the eye. Pain causes the globe to be retracted by spasmodic jerks; adipose matter cannot be compressed, and it is

therefore driven forward every time the muscles act. The fat carries with it the cartilago nictitans, and the edge of the body being very fine and lying close to the globe shovels up any foreign substance that may be within its reach, to place it upon the rounded development at the inner corner of the eye. Still may the reader inquire, if the cartilago nictitans is covered with conjunctival membrane, and the inner corner of the eye is enveloped in the same, does not the foreign substance occasion pain to these as it did to the globe of the eye? No; it was just hinted that conjunctiva is not sensitive except two layers of the membrane are together, as the ball and the inner surface of the eyelid. The haw, therefore, has no sensation upon its external surface, neither has the inner corner of the eye, whence all foreign bodies are quickly washed by the overflow of tears.

Farriers, however, are not an extinct race; many of the fraternity still exist, still practise, and are, it is to be feared, very little improved. Should one of these gentlemen offer to cure specific ophthalmia, it is hoped the owner, after the foregoing explanation, will now allow the "haw" to be excised.

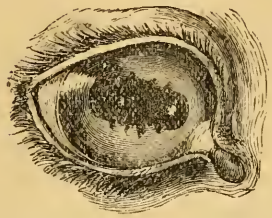
Let every man treat the animals over which he is given authority with kindness, as temporary visitors with himself upon earth, and fellow-inhabitants of a striving world. Let him look around him; behold the owner of a coveted and highly prized racer to-day, in a week reduced to the possessor of a blind and wretched jade; then ask himself what kind of property that is to boast of, which may be deteriorated or taken from him without his sanction? Having answered that question, let him inquire whether it is better to propitiate the Higher Being by showing tenderness towards His creatures, or to defy the power which can in an instant snatch away his possessions.

CATARACT.

Cataract is a white spot within the pupillary opening. The spot may be indistinct or conspicuous—soft, undefined or determined; it may be as small as the point of a needle, or so big as to fill the entire space: in short, any indication of whiteness or opacity upon the pupil is regarded as a cataract.

Cataracts are designated according to the parts on which they reside. The lens of the eye is contained within a capsule, as an

egg is within its shell. Any whiteness upon this capsule is termed a capsular cataract. The lens floats in a liquor which surrounds it, as the white does the yoke of an egg. Any turbidness in this fluid is termed a milky cataract; any speck upon the lens is a lenticular cataract; and any little glistening appearance behind the capsule is spoken of as a spurious cataract.



PARTIAL CATARACTS OR SMALL WHITE SPECK WITHIN THE PUPIL OF THE EYE.

Prevention being better than cure, an attempt will be made to show the reader the causes which operate in inducing this painful affection. Then will the gentleman be kind enough to hold a sheet of white paper close to his nose, so that the eyes may see nothing else for a single half-hour. Let us suppose the trial has been made. With many people the head has become dizzy and the sight indistinct. In some persons singing noises are heard and a sensation of sickness has been created. Let the author strive to explain this fact. Travellers passing over the Alps wear green veils to prevent the strain or excitement which looking upon a mass of white snow occasions the visual organs. Any excitement is prejudicial to the eye. Workers at trades dealing in minute objects often go blind, and the use of the microscope has frequently to be discontinued. But to look continuously upon a white mass is the most harmful of all other causes.

This fact must be considered as established. And what does the horse proprietor have done to his stable? He orders the interior to be whitewashed. It looks so clean, he delights to see it; but do the horses—does nature equally enjoy to look upon those walls of "spotless purity?" Before those walls, with its head tied to the manger, stands the animal through the hours of the day. Close to its nose shines the painful whiteness which the master so enjoys. Is it, then, surprising (seeing how nature for its own wise purposes has connected all life) that the equine eye, doomed to perpetual excitement, sometimes shows disease?

A horse with imperfect vision is a dangerous animal. A small speck upon the lens confuses the sight as much as a comparatively large mark upon the cornea. To render this clear, let the reader hold a pen close to the eye, it prevents more vision than yonder

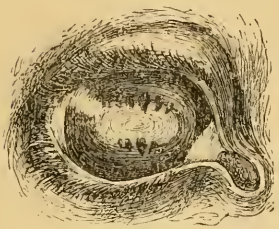
huge post obstructs. So impediments are important, as they near the optic nerve. The lens is nearer than the cornea, and therefore any opacity upon the first structure is more to be dreaded.

However, let it be imagined a horse, with an opacity upon the pupil, and the sight confused by staring at a white flat mass spread out before it, is led forth for its master's use. By the aid of the groom and its own recollections it manages to thread the gangway, and even to reach the well-known house door in safety. The owner, an aged gentleman of the highest respectability, comes forth in riding costume. He mounts, and throwing the reins upon the neck of the animal, sets his nag into walking motion, while he, erect and stately, looks about him and proceeds to pull on his gloves. The horse, however, has not gone many steps before the cataract and the confused vision, acting conjointly, produce alarm. The steed shies and the gentleman loses his seat, being very nearly off. The passengers laugh, the proprietor suffers in his temper, but the whip is used, and the equestrian is soon out of sight.

The man and horse proceed some distance; the gentleman becomes much more calm and the horse recovers sufficient composure to try and look around it. The pace now is rather brisk, when the horse thinks, or its disabled vision causes it to imagine, it sees some frightful object in the distance. The timid animal suddenly wheels round. The rider is not prepared for the eccentric motion: he is shot out of the saddle. He falls upon his head; he is picked up and carried home; but afterwards he avoids the saddle.

Never buy the horse with imperfect vision; never have the interior of your stable whitewashed. Then what colour is to be employed? Probably blue would absorb too many of the rays of light; at all events, it seems preferable to copy nature. Green is the livery of the fields. In these the eyes take no injury, although the horse's head be bent toward the grass for the greater number of the hours. Although such is the case, nature displays a variety of colours, and the internal disposition of stable painting should imitate her as much as possible. Drab, blue and green, and shades of them, blended in artistic design the one with the other, would form colourings calculated to ease and not oppress the vision of the inmates, like whitewash.

For complete cataract nothing can be done. In man, operation or couching may be performed with success; but the horse can retract the eye and protrude the cartilagino nictitans. Thereby difficulties are created; but these may be overcome. However, when an opening through the cornea is perfected, the spasmodic contraction of the muscles of the eye, acting upon the fibrous covering of the globe, is apt to drive forth the liquid contents of the organ in a jet: this is irreparable, of course. When so fearful a catastrophe does not ensue, still the capsule of the lens is always difficult to divide, and the lens itself cannot easily be broken down. The lens, therefore, must be abstracted; but that necessitates a large incision, which the previously named probability forbids. Displacement is the only resort left; but the lens, when forced from its situation into the posterior or dark cavity is, by the contraction of the muscles, forced up again. The uncertainty of the result, even when the operation is successfully performed, is peculiarly disheartening. Half lose their eyes in consequence of the attempt; half the remainder are in no way benefited; to the rest, as these cannot wear spectacles to supply the place of the absent lens, of course the pain endured becomes useless torture.



COMPLETE CATARACT.

DIAGRAM ILLUSTRATING THE ACTION OF BELLADONNA.

The inner space represents the natural pupil, on which no cataract is to be observed. The second space represents the pupillary opening as it may be enlarged by the application of belladonna, whereon two partial cataracts are to be remarked. The outer space merely represents the dilated pupil.

Where partial cataract is feared, but cannot be detected, then artificially dilate the pupil. Rub down two drachms of the extract of belladonna in one ounce of water. Have this applied, with friction, to the exterior of the lids and about the eye: mind none gets into the eye. The belladonna, acted upon by the secretions, turns to grit; inflammation is the consequence, and the clearness of the cornea is impaired. When the belladonna is properly used, it dilates the iris and exposes the margin of the lens, thus enabling the practitioner to inspect the eye in a full light.

To tell a spurious cataract, which defect is never permanent,

first observe the spot. Note if it present any metallic appearance, and try whether, as the horse's head is moved, it alters in shape, catching irregular lights. Then inspect the exterior of the eye, see if it retain any signs of recent injury. Subsequently endeavour, so far as may be possible, to ascertain the exact position occupied by the defect; upon all this evidence put together, make up your opinion.

To distinguish between the different kinds of cataract, apply the belladonna. Next, place the horse near a window or under a door. Should the sun shine, have the animal led into the full glare of day. Look steadily into the eye from different points of view. Then have the horse's head moved about, all the time keeping your sight fixed upon the part you are desirous of inspecting.

Should one spot continue in every position, of one bulk and of one aspect, never becoming very narrow and always occupying one place throughout the examination, it is a lenticular cataract that is beheld.

If the whiteness changes appearances, in some positions seeming very thin or perceptibly less bulky, it is assuredly a capsular cataract which is inspected.

Most cataracts may be either partial or complete; but a spurious cataract is always partial, never permanent, and invariably caused by violence.

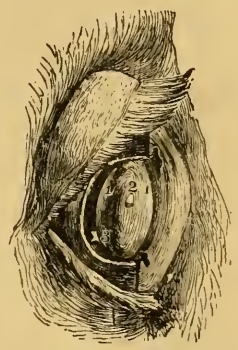


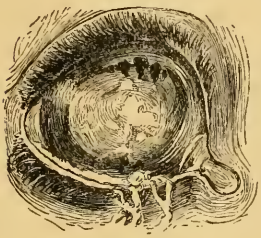
DIAGRAM ILLUSTRATING THE DIFFERENT KINDS OF CATARACT.

1. A capsular cataract or an opacity, situated on the envelope of the lens.
2. A lenticular cataract or an opacity, within the substance of the lens.
3. A spurious cataract, or a particle of lymph adhering to the inner surface of the lenticular capsule.

For spurious cataract, treat the injury to the exterior of the eye. For other cataracts do nothing; there is no known medicine of any beneficial effect. However, it is well to add, the author's and the general opinion favours the absorption of cataract, or that these opacities may appear, and, after a time, go away without the aid of medicine. Nevertheless, to hasten such a process, have the interior of the stable coloured. However much in favour a clean, white wall may be with grooms, or with the lower order, exercise an informed judgment; have the wall shaded of the tint most pleasant to the inhabitants' sight, and the prospect of recovery will, by so trivial an outlay, be materially facilitated.

FUNGOID TUMOURS WITHIN THE SUBSTANCE OF THE EYE.

These, fortunately, are rare affections. We know of no immediate cause for their production. No man can prophesy their appearance. The horse, to human judgment, may enjoy the top of health, may be in flesh and full of spirit—altogether blooming. Nevertheless, the action of the legs may perceptibly grow higher, and the ears become more active. The animal will wait to be urged or guided when the road is clear. Also, it may run into obstacles when the rider does not touch the rein. Should anything be left in the gangway of the stable, it is certain to be upset by what the grooms term "that clumsy horse." Sometimes it will stand for hours together neglecting its food, with the head held piteously on one side. Occasionally, when at grass, it may be found separated from its companions, alone and dejected, with the head as before, held on one side, while the waters of the eye copiously bedew the cheek.



FUNGUS HÆMATOIDES, OR CANCEROUS GROWTHS WITHIN THE SUBSTANCE OF THE EYE.

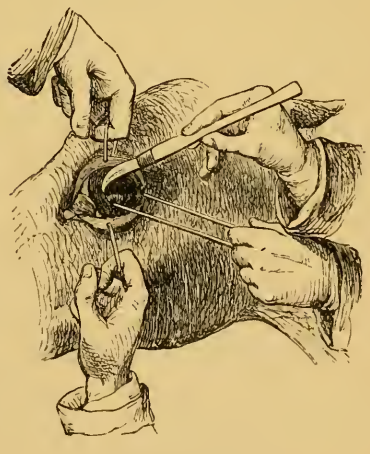
At last the eyes are examined. The eyeball may be clear, but some brilliant yellow substance may be discerned shooting from the base of the interior, and the horse is declared contaminated by a cancerous disease.

All is now explained: the sight is lost; the horse is blind. There are three terrible decisions now left to the master. Is the life to be shortened? The thought shudders at taking existence, when misery pleads for consolation. Is the animal to live on, and nurture to maturity the seeds of a cancerous disease? The mind shrinks from subjecting any creature to the terrible depression and hopeless agony attendant upon such disorders. Is an operation to be performed? Shall the surgeon extirpate the eye? This last proposal seems the worst of all; nor does inquiry improve the prospect. The cancer does not entirely reside within the eye; it is not limited to that part. The taint is in the constitution, and the operation can do no more than retard its effect. The eye removed, the cancerous growth will soon fill the vacant orbit.

After two or several months of dreadful suspense, the life at last will be exacted, and the animal, worn out with suffering, will expire.

Under such circumstances, the writer recommends death, before the full violence of the disease is endured. Should, however, the reader think differently, and prefer the extirpation of the eyeball, the operation will here be described. First, mind the operator has two knives not generally kept by veterinary surgeons: one of small size and slightly bent to one side; the other, larger and curved to one side till it has nearly reached a semi-circle. Mind the operator has everything ready before he begins: a sharp scalpel, two straight, triangular-pointed needles, each armed with strong twine; one curved needle, similarly provided; sponge, water, injecting tube, bellows, lint, when all these requisites are at hand.

Cast the horse; impale both eyelids, each with one of the straight needles, and leave the assistant to tie the thread into loops. Through these loops the assistant places the forefinger of each hand, and then looks toward his superior. The sign being given, the man pulls the eyelid asunder, while the surgeon rapidly grasps the straight knife, and describes a circle round the globe, thereby sundering the conjunctival membrane. The knife is then changed, the small curved blade being taken. The assistant again makes traction, and the knife, being passed through the divided conjunctiva, is carried round the eyeball, close to the bone; the levator and depressor muscles are detached by this movement. The assistant again relaxes his hold, the operator relinquishing the knife, and selects the curved needle. With this the cornea is transfixed. The thread is drawn through, and is then looped. Into this loop the surgeon puts the forefinger of his left hand, and, giving the sign once more to his assistant, takes hold of the large bladed knife. Traction is made on all the loops. The curved



EXTIRPATION OF THE EYE.

knife is inserted into the orbit, and, with a sawing motion, is passed round the organ. The posterior structures are thereby divided, and the eye is drawn forth.

The operation ought to be over in less time than five minutes; but speed depends on previous preparation. The assistant, during the operation, should rest his hand upon the horse's jaw and face—sad accidents by that means are prevented; but, above all things, he should be cool, doing just what is sufficient and no more.

Some hæmorrhage follows the removal of the orb. To stop it, inject cold water into the empty socket; should that have no effect drive a current of air from the bellows upon the divided parts; if this be of no avail, softly plug the cavity with lint, bandage the wound to keep in the dressing, and leave the issue to nature.

Such is the undisguised operation for extirpating the horse's eye. The reader is confidently asked whether a few months of miserable existence, with the certainty of a fearful death, are not dearly purchased by so great a suffering?

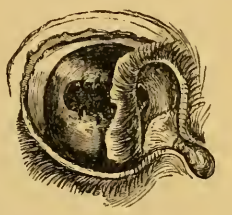
LACERATED EYELID.

Horses frequently endeavour to amuse the weary hours by a playful game with one another. If accident results, it is not wholly the fault of the guileless animals; they are tied to the mangers; they cannot exert their activity; otherwise their principal enjoyment resides in the freedom of their heels. And looking at a blank mass of monotonous white for many hours may have disabled the sight or have confused the judgment.

The groom being absent, advantage is taken of the event to have a romp. The animals snap at one another over the divisions to their stalls. Often the amusement extends, and four or five heads may be beheld united in the sport. Generally, however, the game is confined to two players; but, either way, no injury is meant; the teeth rattle, but they are intended to close upon empty space. However, man has to bear the consequences which his errors provoke. That species of confinement to which horses are subjected renders the judgment uncertain and the sight untrue. The animal pretends to snap; but, either from one head not being removed quick enough, or from the other head being protruded too far, the teeth catch the eyelid and divide it through the centre. The injury

is not very serious, for had malice impelled the assault much more than an eyelid would have been grasped between the jaws.

In other cases, the groom has driven nails into the wall of the gangway. Grooms are fond of seeing the stable decorated with pendant objects of various kinds. So long as the nails are occupied little danger ensues, but they are apt to be left vacant, and horses are constantly passing along the gangway. To leave room for the servant obliges the animal very often to keep close to the wall; the projecting nail catches the lid of the eye, and a long rent, commencing upon the outer side, usually results.



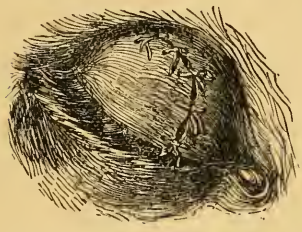
EYELID TORN BY A NAIL.

Such an injury creates great alarm, but it is less serious than it appears to be. Let the wound, from whatever cause it springs, be well bathed with a soft sponge and tepid water, in order to remove all grit or dirt should any be there. This done, procure a long piece of strong thread, having a needle at each end. The needles should be new, very sharp and strong. Let all the punctures be made from within outward, to avoid injuring the eyeball, and a separate needle be employed for each divided surface. The thread being brought through, cut off the needles, and loop but do not tie the thread. Proceed with another suture, and do not tie that; then with another, observing the same directions, and thus till the eyelid has a sufficient number of sutures. Then proceed to draw all to an even tightness—none should be absolutely tight. The parts ought only to be approximated, not tied firmly together. Well, all the sutures being of equal size they are fastened, and the operation is concluded.

But as the wound begins to heal it is apt to itch. The horse will attempt to rub it, and in so doing make the wound larger by removing the sutures, and with the lid is likely to do harm to it beyond repair. Consequently, to prevent this it will be well, immediately after the operation, to fasten the animal to the pillar-reins of its stall, and let it remain there till the wound has healed. The injury will in a short time close, but the sutures should be watched. When the holes begin to enlarge, the thread can be snipped. If the punctures be dry, let the divided sutures remain till nature shall remove them. If they are moist, and the wound

appears united, you may try each thread with a pair of forceps. Should any appear loose then withdraw it, for after division it can be of no use and may provoke irritation. However, should it be retained, employ no force; have patience, and it will come forth without man's interference.

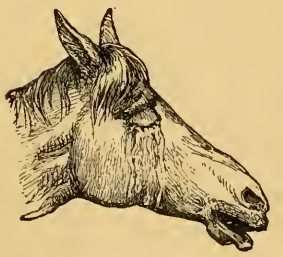
Feed liberally; regulate the bowels by mashes and green-meat; smear the wound with oil of tar to dispel the flies; for should the accident happen during the warmer months, these pests, biting and blowing upon so delicate a part as the eye, may occasion more harm than our best efforts can rectify. When the lid is bitten through, the operation is precisely similar; the divided edges are to be brought together by sutures. To prevent needless repetition, an engraving of the bitten lid, after the operation has been performed, is here presented.



THE LID, WHEN DIVIDED BY THE TEETH BROUGHT TOGETHER BY MEANS OF SUTURES.

IMPEDIMENT IN THE LACHRYMAL DUCT.

The lachrymal duct in the horse is a small canal leading from the eye to the nostril. It commences by two very minute openings near the terminations of the upper and lower lids at the inner corner of the eye; it emerges upon the dark skin which lines the commencement of the horse's nostril, being on the inner side of the internal membrane. Its use is to carry off the superflux of tears; hence, with human beings, who have a like structure, "much weeping at the theatres provokes loud blowing of noses."



A HORSE'S HEAD, DISPLAYING OBSTRUCTION OF THE LACHRYMAL GLAND.

The channel being so minute, any substance getting into it soon becomes swollen with the moisture and closes the passage. The tears cannot escape, and being secreted flow upon the cheek. The perpetual stream pouring over a part not designed for such uses causes the hair to fall off, and thus form gutters along which the

fluid continues to run. The flesh at length excoriates, and numerous sores are established; the lids swell and become raw at the margins; the conjunctiva reddens, and the transparency of the cornea is greatly lessened by the spread of inflammation.

The wretched animal in this condition presents a very sentimental appearance to a person ignorant of the facts of the case. The swollen lid, because of its weight, is permitted to close over the eye, while the tears, flowing fast upon the cheek with the general dejection, gives the creature an aspect of weeping over some heavy affliction.

Like the late William Percivall, whose works on veterinary subjects remain a monument to his memory, the author has encountered but a single case of this description; it was in a matured but not a very aged animal. The report was, that a year ago it had been attacked by influenza. The lid then enlarged, and the near cheek had been wet ever since.

Referring to the pages of Percivall's *Hippopathology*, the author procured a thin, elastic probe, about twelve inches long. The horse being cast, and an assistant holding the upper lid, the probe was introduced at the inner corner of the eye, by the lower opening to the duct. The entrance was easy enough, but the passage was soon obstructed; then the probe was inserted at the opening of the duct within the nostril. The way in this direction was longer, but the end came at last without any good being effected. Next, a syringe being charged, the fine point was introduced up the nasal termination of the duct, the power of the jet effectually removed every impediment, the water streamed through the upper openings, and the horse was sent home cured.

The writer saw the animal six months subsequent to the operation. It was apparently in excellent health, and obviously in amended condition. The owner said the horse soon got well after it reached home; but, being pressed to say how great a duration "soon" represented, he rejoined, "*About* six weeks *perhaps*."

Three months afterwards, however, the horse was once more brought with "watery eye," and again operation was successful. The proprietor then received back and soon sold the creature, which being past the age when horses are most valuable, seemed likely to become an expensive retainer.

CHAPTER III.

THE MOUTH—ITS ACCIDENTS AND ITS DISEASES.

EXCORIATED ANGLES OF THE MOUTH.

Let no man punish a horse for want of obedience; the sole use of the creature and its only delight is to obey. Let no person abuse it for having a hard mouth, or for not answering to the rein. The mouth has been rendered hard by the injudicious application, or too severe use, of the bit during early training. The horse's pleasure is the gratification of its master. Observe the antics of the nag thoroughly trained and perfectly up to the rider's point of jockeyship. Does not every fibre seem to quiver with excess of happiness? There is a tacit understanding between man and horse; the pretty arts and graceful prancings of the animal tell how joyful it is made by the conviction that it is sharing man's amusement. But let the equestrian dismount, and another, above or below the horse's educational point, assume the saddle, that understanding no longer exists. The harmony is destroyed; there is no intelligence between horse and man. All the playfulness disappears; the entire aspect of the animal is changed, and it sinks to a common-place "ugly brute."

The majority of drivers are very particular about the horse's mouth; yet they all abuse the animal, as though it was their desire to destroy that which each professes to admire. Every supposed error is punished with the lash, but the whip can convey no idea; the lash does not instruct the animal; beat a horse all day, and it will only be stupid at sunset. All the horse can comprehend from the smart is a desire that the pace should be quickened; that wish it endeavours to comply with. The person who guides the vehicle generally becomes frantic at such perversity; he begins "jagging" and "sawing" the reins. The iron is violently pulled against the angles of the mouth, or rapidly passes from one side to the other.

Would the owner or driver take the trouble to instruct his dumb servant in his wishes, the poor drudge would rejoice to exhibit its accomplishments. But no information is communicated by first urging and then checking; the timidity is increased by the one, the angles of the mouth are excoriated by the other.

Ladies' horses invariably have admirable mouths. The gentleness of the woman, or the sympathy existing between two gentle beings, produces this effect. The horse is never dangerous when not alarmed; the feminine hand pats the neck of the steed; the

VARIOUS MODES OF FORMING THAT WHICH ALL MEN SPEAK OF WITH ADMIRATION AS "A GOOD MOUTH."

feminine voice assures the timidity; the whip never slashes; the reins are never converted into instruments of torture; the weight is usually light and the pace is easy. A perfect understanding is soon established between the two, and the rider, notwithstanding her weakness and her flapping dress, sits the saddle in safety, while the animal increases in value under her care.

Man certainly does not gain by the contrast; the male treatment does not improve the animal. The horse's memory, like that of most dumb creatures, is very tenacious; the quadruped is not made more steady by ill-usage; the sore corners of the mouth oblige the animal to be laid up "for a time," and the expense of medical treatment increases the sacrifice consequent upon loss of services.

Trouble attends the circumstance, at which the favourite groom is sure to grumble, even if the master does not receive "notice." The food must be prepared; a few oats thrown into the manger and a little hay forked into the rack will not now suffice: all the provender must be carefully prepared. At first, good thick gruel and hay-tea must be the only support. In a few days, boiled and mashed roots may be introduced; these may be followed by cut roots boiled but not mashed, the whole being succeeded by scalded hay with bruised and mashed oats. When all is done, however, the horse's temper is not improved, and its mouth is decidedly injured. Such results will vex the temper of any good groom, and very many it will anger to the throwing up of their situations. They "will not get a horse into beautiful condition for master only to spoil."

EXCORIATED ANGLES OF THE MOUTH.

When the horse is thus injured, ignore all filthy ointments; such things consist of verdigris, carbonate of zinc, horse turpentine, blue, green or white vitriol, mixed up with dirty tallow or rank lard. Now, to grease a horse's teeth is not much worse than to tallow its lips; if the former prevent it from feeding, the latter is not calculated to improve the appetite.

Discarding all unguents, have the following lotion prepared:—

Chloride of zinc	Two scruples.
Water	Two pints.
Essence of aniseed . . .	A sufficiency.

Pour some of this into a saucer and, with anything soft, apply the lotion to the sore places; do not rub or scrub; do your ministering gently; so the parts are wet, no further good can be accomplished; use this wash after every feeding or watering. In a little while amendment is generally perceptible; where violence has been used, it is impossible to foretell the extent of the injury. A superficial slough may be cast off; this process is attended with fœtor—that the lotion will correct, and thus add to the comfort of the horse. The cure, however, will possibly leave the horse of a

PERMANENT BLEMISH AND DESTRUCTION OF THE NICE SENSIBILITY OF THE MOUTH.

lessened value. Where the skin has been destroyed it is never reproduced; the wound will, therefore, probably blemish, and may lead a future purchaser to suspect "all sorts of things." The horse is certainly deteriorated; with the skin the natural sensibility of the part is lost. A cicatrix, consisting only of condensed cellular tissue, must form upon the spot; this structure is very feebly, if at all, nervous, and when compared to the smooth and soft covering of the lips, may be said to be without feeling, and is very liable to ulceration.

PARROT-MOUTH.

This, strictly speaking, is not a disease—it is a malformation. The upper incisors, from those of the lower jaw not being sufficiently developed, meet with no opposing members; they, consequently, grow very long, and from their form are likened to the bill of a parrot.

This formation is not unsoundness, but it cannot be a recommendation; the horse can only gather up its corn imperfectly; much falls from the mouth during mastication. The animal which requires four feeds and a half daily to support the condition another maintains upon four feeds must be the more expensive retainer of the two. Moreover, it is a virtue in a horse to thoroughly clear out the manger; a healthy animal not only licks out corners to catch stray grains but hunts among the straw for any corns that may have fallen. This duty the parrot-mouth disables a horse from performing; the good feeder alone is equal to full work.

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Besides, a rider is always pleased when sauntering down the green lanes during the spring of the year to see the horse's neck stretched out to catch a twig of the shooting hedge—this can do no harm; but it is hard alike upon horse and man to always have a tight hold of the rein when the fresh scent of the budding thorn tempts the mouth to its enjoyment. And yet, in the majority of instances, it would be cruelty to yield and permit the parrot-mouth to bite; the under teeth very often rest against the palate. No

more need be said to caution owners possessed of an animal thus afflicted against a natural indulgence. The parrot-jaw is a deformity for the perpetuation of which man is responsible; dispositions and formations are hereditary. Would the owners of stock only exercise some judgment in their selections, this misfortune might speedily be eradicated.

LAMPAS.

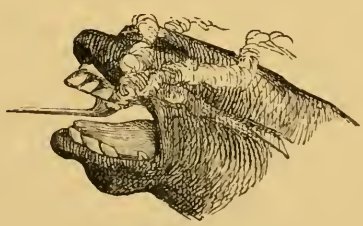
The horse's lot is, indeed, a hard one; it is not only chastised by the master, but it also has to submit to the fancies of the groom. "Lampas" is an imaginary disease, but it is a vast favourite among stable attendants. Whenever an animal is "off its feed," the servant looks into the mouth and, to his own conviction, discovers "the lampas." That affection is supposed to consist of inflammation, which enlarges the bars of the palate, and forces them to the level of or a little below the biting edges of the upper incisor teeth.

THE LAMPAS IRON.

Would the groom take the trouble to examine the mouths of other young horses which "eat all before them," the "lampas" would be ascertained to be a natural development; but the ignorant always act upon faith, and never proceed on inquiry. Young horses alone are supposed to be subject to "lampas;" young horses have not finished teething till the fifth year. Horses are "broken" during colthood; they are always placed in stables and forced to masticate dry, artificial food before all their teeth are cut; shedding the primary molars is especially painful; of course, during such a process, the animal endeavours to feed as little as possible. A refusal to eat is the groom's strongest proof that lampas is present. But, putting the teeth on one side, would it be surprising if a change of food and a total change of habit in a young creature were occasionally attended with temporary loss of appetite? Is "lampas" necessary to account for so very probable a consequence? The writer has often tried to explain this to stable servants; but the very ignorant are generally the very prejudiced. While the author has been talking, the groom has been smiling; looking most provokingly knowing, and every now and then shaking his head, as much as to say, "Ah my lad, you can't gammon me."

Young horses are taken from the field to the stable, from juicy grass to dry fodder, from natural exercise to constrained stagnation. Is it so very astonishing, if under such a total change of life, the digestion becomes sometimes deranged before the system is altogether adapted to its new situation? Is it matter for alarm should the appetite occasionally fail? But grooms, like most of their class, regard eating as the only proof of health. They have no confidence in abstinence; they cannot comprehend any loss of appetite; they love to see the "beards wagging," and reckon the state of body by the amount of provision consumed.

The prejudices of ignorance are subjects for pity; the slothfulness of the better educated merits reprobation. The groom always gets the master's sanction before he takes a horse to be cruelly tortured for an imaginary disease. Into the hands of the proprietor has a Higher Power entrusted the life of His creature; and surely there shall be demanded a strict account of the stewardship. It can be no excuse for permitting the living sensation to be abused, that a groom asked and the master willingly left his duties to another. Man has no business to collect breathing life about him, and then to neglect it. Every human being, who has a servant, a beast or a bird about his homestead, has no right to rest content with the assertions of his dependants. For every benefit he is bound to confer some kindness. His liberality should testify to his superority; but he obviously betrays his trust and abuses the blessings of Providence when he permits the welfare of the creatures dependent on him to be controlled by any judgment but his own.



BURNING FOR LAMPAS.

The author will not describe the mode of firing for lampas. It is sufficient here to inform the reader that the operation consists in burning away the groom's imaginary prominences upon the palate. The living and feeling substance within a sensitive and timid animal's mouth is actually consumed by fire. He, however, who plays with such tools as red hot irons cannot say, "Thus far shalt thou go." He loses all command when the fearful instrument

touches the living flesh: the palate has been burnt away, and the admirable service performed by the bars, that of retaining the food during mastication, destroyed. The bone beneath the palate has been injured; much time and much money have been wasted to remedy the consequence of a needless barbarity—and, after all, the horse has been left a confirmed "wheezer." The animal's sense being confused, and its brain agitated by the agony, the lower jaw has closed spasmodically upon the red-hot iron; and the teeth have seized with the tenacity of madness upon the heated metal.

When the lampas is reported to you, refuse to sanction so terrible a remedy as burning; order the horse a little rest, cooling and soft food, and the adoption of slight remedial measures.

More than twenty years back the reviser wrote against the cruelty in burning, as it was called, for the lampas. But strange to say, even at this date, 1891, men exist who believe that there is such a disease as lampas, and that horses need the barbarous treatment inveighed against for its eradication. No such disease exists as lampas. The full development of the bars of the palate represents a well formed and healthy condition of the part, which man should do all in his power to conserve; and anyone operating, as above described, displays ignorance, and is guilty of most horrible cruelty and sin.

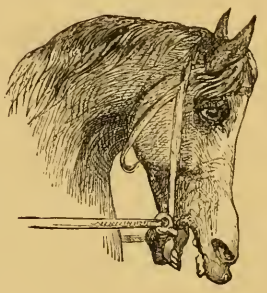
INJURIES TO THE JAW.

Save when needless severity urges timidity to madness, the horse is naturally obedient. This is the instinct of the race. The strong quadruped delights to labour under the command of the weaker biped. Its movements are regulated by him who sits above or behind it. It often waits for hours with its head pulled backward, its mouth pained, and its eyes blinded. All its learning is attention to the sounds of the human voice. It is guided by touches. It submits to the whip when it might easily destroy the whipper. It eats, it drinks, it rests only by man's permission. Yet there are such words as "vice" and "spite" connected with the horse; but, there remains to be spoken the word which shall fitly characterize the self-sacrificing life of the noble animal.

Man could not endure such tyranny, nor does the horse, notwith-

standing its submissive instinct, live under it very long. The majority perish before they are eight years old. They are worked to an early grave—often they are distorted before the body's growth is completed. Is there any other life so serviceable? Is there any other life which reads so sad a moral? For the time it is allowed to breathe and labour, the horse patiently obeys its tyrant. It aids his vanity; it conforms to his pleasure; it devotes strength, will, and life to man's service.

Let every owner of a horse treat his slave with gentleness. Above all things, let no individual employ the reins as instruments of torture. The horse will neither be wiser nor better for such a mode of punishment. Besides, the man may deteriorate his own or another's property. With the bit a jaw has been broken, and with the snaffle the bone has been injured. An animal with a good neck carries the chin near to the chest. The iron of the snaffle, therefore, cannot pull against the angles of the mouth. It rests upon the gums, a point disputed by some, although Cuvier, the great French naturalist asserted that the horse never would have been rendered serviceable to man had it not been for the existence of the bare space which occurred between the tusk and the molar teeth. Of course, he meant to convey the idea that the bit made its impression upon the gums and not upon the teeth nor angles of the mouth. To the truth of this statement the following illustration will testify:—

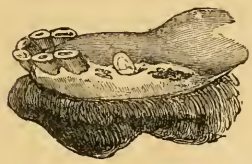


THE SNAFFLE BEARING UPON THE LOWER JAW.

The cruel bit is, however, in general use with carriage horses. Fashion delights in a vehicle stopped smartly at a door. The greatest noise possible, then, announces the new arrival. The wheels grate—the horses struggle. The coachman pulls hard—the vehicle sways to and fro. The footman jumps down and pulls at the bell, as though life and death depended on a speedy answer to his summons.

All this is, doubtless, very pleasant, but how does it operate upon the poor horses? These, to be pulled up suddenly, must be thrown upon their haunches by the unscrupulous use of the bit. The pressure often wounds more than the gums; frequently the bone

of the lower jaw is bruised. The gum then must slough, and a portion of bone must be cast off. The exfoliation of bone is a tedious process accompanied with an abominable stench. The surgeon must be constantly in attendance; otherwise the gum might close over the exfoliating bone, and numerous sinuses might be established within the mouth. The exfoliated substance must come away. The abscess, which would announce its retention, would be more painful than the open wound, and ultimately would turn to a foul and ragged ulcer. Such an injury may occur wherever the bit rests, before or behind the tush, and a similar injury, though not to the same extent, will result from an unscrupulous use of the snaffle.



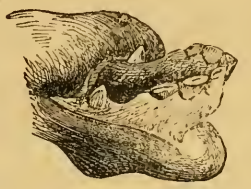
THE EFFECTS PRODUCED ON THE LOWER JAW BY THE ENERGETIC USE OF THE SNAFFLE OR BIT.

The most forward and smaller mark indicates the injury usually done by pulling at the snaffle. The more backward dark place indicates the spot where tugging at the bit bruises the bone of the lower jaw.

Supposing a case of this description is submitted to your notice upon the day succeeding its occurrence. No change is anticipated, such as would denote a bruise to other structures. The covering to the gums is thick and hard, and it will conceal much that may be taking place beneath it. If any spot be darker, redder, or whiter in colour,—if any place be more sensitive than the adjacent parts, the knife is there inserted till it grate upon the bone. The extent of the necessary incision is decided by the efforts made in resistance. A thin fluid may issue from the orifice; but when the knife grates upon the bone then the animal's struggles announce the extent of the bruise. Sound bone may be cut, scraped, or even burnt with impunity; but, when bruised or otherwise diseased, the structure is most acutely sensitive.

When the wound emits its characteristic odour, a lotion composed of chloride of zinc, one scruple,—water, one pint,—ess: of aniseed a sufficiency, should be syringed into the openings, several times during the day. The lotion, also, has a tendency to heal the sores, which must be counteracted by the employment of the knife. Occasionally, however wide the incision, it may be too small for the cast off bone to escape from. The knife again must enlarge the orifice, and the forceps be inserted to grasp the exfoliated substance. That taken away, the lotion is continued, and the injury left to heal at nature's pleasure.

The late W. Percivall, in his excellent work entitled, "Hippopathology," describes horses as sometimes injured under the tongue by the port of the bit. An engraving, representing such an injury, is given; but it is hoped no gentleman of the present day would employ the severe invention by which alone such a hurt could be produced. The consequences may be lasting. The terminations of the sublingual ducts are included in the blackness. Were these bruised and inflamed, their delicate mouths might be obliterated and hopeless fistula be established.



INJURY SOMETIMES ACCOMPLISHED WITH THE PORT OF THE BIT.

The bit must be sharply and strongly tugged at before it can harm the roof of the mouth. Any one who has seen horses pulled up before a fashionable mansion must have observed them open wide their mouths. They do this to escape the wound of the bit. The animals extend their jaws to prevent it striking the roof of the mouth. Notwithstanding the existing age is more civilised than those which preceded it, the bits used at the present time can, without any vast display of genius, be made to injure the obedient animal, for whose mouth such ferocious checks are forged. An injury thus inflicted is sufficiently serious. The bony roof not only supports the bars, but also forms the solid floor of the nostrils. As it is not very thick the greater is the danger when it is injured. The wound, because of the unyielding substance on which it is inflicted, is more painful than that of the lower jaw. It is also for the same reason more severe.

THE UPPER JAW INJURED BY THE BARBAROUS USE OF THE BIT.

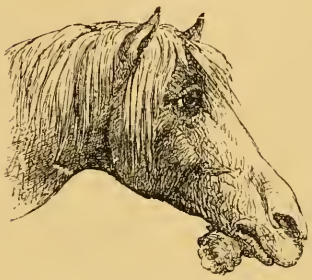
The last injury demands the same treatment as has already been described, only the remedies are far more difficult to apply. Should the entire portion of bone exfoliate, and a hole be left behind, the consequence is not of fatal import. Bone can reproduce itself, though it is somewhat eccentric in its growth. So after the opening is closed, the surface towards the nostrils may be uneven, and the horse be rendered an inveterate wheezer.

When the animal is once injured, never, for your own safety, afterwards employ a bit. If it be ridden or driven, always use a

snaffle, and use even that most tenderly. The horse has vivid recollections, and man is naturally forgetful. When power is entrusted to the oblivious, danger is apt to be close at hand.

The inferior margin of the jawbone is liable to harm from the curb chain, and some men *will* have the curb chain tight. Such people are commonly very imperious. They shout and slash and tug when they want obedience from an animal whose delight is to be allowed to please. Their meaning is seldom comprehended, and therefore their orders are rarely obeyed; whereas, they would be humbly propitiated were their commands only given as though the animal had no interest to rebel.

The result of such violence is, from the curb chain being ruthlessly jerked, the jawbone soon enlarges. A portion of the bone having been bruised, has to exfoliate; a foul abscess forms; tumour speedily succeeds to tumour; osseous structure is thrown out, and a swelling is matured before the enlargement heals.



TUMOUR PROVOKED BY THE ABUSE OF THE CURB CHAIN.

The treatment of such a case is similar to that already directed. Keep the wound freely open, to permit the unimpeded exit of exfoliated bone. Use the lotion, previously directed, liberally and constantly. The healing process may then take place without deformity being left behind.

APHTHA.

Nothing proves the sympathy which binds nature more strongly than the sameness or similarity of the diseases that affect man and animals. Tetanus, pneumonia, enteritis, etc., etc., are so alike as to be the same in the human being and in the horse.

It is a sad proof of the stubbornness of pride that a unity, thus enforced by suffering, should be ignored, as though it were an insult to the superior. No compact, founded by nature, can be dependent upon man's liking. The terms may be laughed at, scorned or denied, but these exist. Man is declared in affliction

to be the companion of other life. When will this truth be acknowledged, and the entire family of nature live in one brotherhood.

Aphtha is a human disorder as well as an equine disease. It generally appears in spring and autumn, being produced by heat of body. The groom will often mistake this disease for his pet malady, lampas. At all events, aphtha is accompanied by dulness and a refusal to feed. Both lips commonly swell as the lethargy increases; the tongue tumefies, becomes decidedly red, and generally hangs out of the mouth, partly for the sake of coolness, partly to accommodate its enlarged size. Around the mouth little lumps break forth, which at first are stony hard, and others, though of a larger size, may be felt upon the tongue. Vesicles are soon developed from these spots, and each contains a small quantity of clear gelatinous fluid. The bladders burst; crusts form; and by the time these fall off, the complaint has disappeared.

APHTHA.

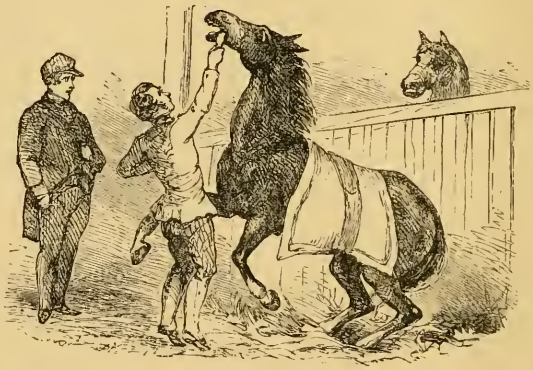
Some good thick gruel and a few boiled roots, which should be repeatedly changed, must constitute the nourishment while the disease lasts, or during the period that the mouth is sore. No medicine—a little kindness is now worth a ship-load of drugs. When the pimples are about to burst, the following may be prepared:—Take—

Borax	Five ounces.
Boiling water	One gallon.
Honey or treacle . . .	Two pints.

When the mixture has cooled, hold up the horse's head and pour half-a-pint into the mouth. Half-a-minute afterwards remove the hand; allow the head to fall and the fluid to run out of the lips. This mixture should be used several times during the day. Beyond this nothing is needed, excepting a cool, loose box, a good bed, body and head clothing, with flannel bandages not too tight about the legs. Work should on no account be sanctioned until the last vestige of the disorder has vanished, and its attendant weakness has entirely disappeared.

LACERATED TONGUE.

Men, who become proprietors of animal life, undertake a larger responsibility than the generality of horse owners are willing to admit. They are answerable for their own conduct towards the dumb existence over which they are legally invested with the right of property; they are also morally accountable for the conduct of those to whose charge they entrust their living possessions. There is nothing about horses but nobility, although the men who attend them often do not possess their good qualities. Grooms do not as yet appreciate how little they know and how much they have to



STICKING TO A HORSE.

learn in equine lore. There are few stablemen who are without a prescription for the composition of what they call a "condition ball;" that is, a certain mixture of drugs, which shall bring a living body suddenly into "tip-top" health. A bevy of companions are invited to see "Jim give a ball." They duly arrive, and part of the horse's tongue is speedily made to protrude from the mouth—this portion being firmly held by "Jim's" free hand. The condition ball is in "Jim's" other hand, and the exhibition consists in the marvellous adroitness with which the ball can be introduced between the animal's jaws. The horse soon sympathises with the excitement that surrounds it. Jim, "quick as lightning," makes a thrust with the ball, whereupon the startled animal raises the head and retreats. "Stick to him, Jim," "Stick to him," shout

the visitors. Jim does stick to him until his hand is covered with blood, or, without quitting its gripe, suddenly loses the resistance which constituted its hold. Should it be the former, the frœnum of the tongue is ruptured, and a wetted sponge soon clears the hand of the groom as well as the mouth of the horse. A general curse and a kick under the belly of the rebellious steed end the amusements for one day. Should it be the latter, Jim finds the larger portion of the quadruped's tongue left in his hand. This is an awful accident. The blood is wiped off, and the groom next morning goes to his master with, "Please, sir, see what 'Fugleman' has done in his sleep."

A farmer engages a pretty-looking stable boy. The young scamp is sufficiently a groom to glory in nothing so much as deception. The farmer, however, takes this pretty boy to the fair, where an additional horse is purchased. With the new "Dobbin" the boy is entrusted, being cautioned to lead it gently home. With numerous protestations boy and horse depart, but have barely reached the suburbs before the knowing youngster stops "Dobbin," and twisting the halter in "a chaw," leads the animal to the nearest gate, where the lad climbs upon its back.

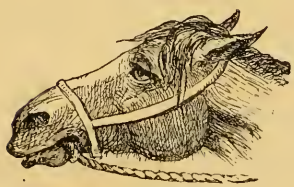
"A chaw" is the slang short phrase for something to chew. This is made by twisting the halter into the animal's mouth so as to encircle the jaw. In this position the rope is thought by some knowing people to answer the purposes of a bridle. To this rope the boy hangs, rolling to either side; now, nearly off—and now, jerked from his seat, as "Dobbin," after repeated urgings, starts off into the lazy pretence at a trot.

Anything inserted into a horse's mouth provokes the curiosity of the animal. It is felt and poked about with the tongue, till at last the lingual organ is, by the exercise of much ingenuity, inserted beneath the obstacle. In this state of affairs "Dobbin" and the pretty boy finish the latter half of the journey; the youngster laughing, as the rough action of the horse bumps him up and down, he all the time dragging at the halter. Before home is reached, night has set in; the boy dismounts, and, with all the simplicity his face can assume, leads "Dobbin" to the homestead.

The boy is protesting about being so very tired after his long walk, when the horse's mouth is discovered to be stained with blood. The youthful expression of surprise exceeds that of the

elder's. Next the halter is found to be rich with the same fluid. The horse's mouth is then opened—it is full of blood, and the tongue nearly cut through. Accusations are made against the lad. At first they are replied to with defiance; at last, they are propitiated with tears, drawn forth by the idea of honesty being suspected. Youthful knowing, however, is not in the long run a match for the self-interest of age; and perseverance is rewarded by a full confession.

"The chaw" is an artifice recognised in every stable. Grooms have their tastes. It is very unpleasant to these gentry when they behold some unmannerly horse hang back in the halter. Stalls are drained into a main channel, situated at the edge of the gangway. The pavement on which the animal stands consequently slants from the manger to the footpath. This nice arrangement obliges the horse always to stand with the toes in the air, and throws the weight of the body upon the back sinews. To ease its aching limbs the animal is apt to go to the extent of its rope, so as to place the hind feet upon the gangway, and even occasionally to give the toe an opposite direction by allowing it to sink into the open drain. Such presumption horrifies the groom's sense of propriety. The ignorant mind's idea of beauty is "everything to match." He thinks all is so nice when the animals dress to a line, like soldiers on parade. To have this line preserved even in his absence he puts "a chaw" into the refractory "brute's" mouth. This chaw is to be preserved night and day. The tongue soon gets under the rope. Timidity is rendered yet more fearful by persecution. The voice of the groom has become a terror to the quadruped. It hangs back for ease, and is surprised by the vehement exclamation of the tormentor. Back goes the neck and up goes the head. The animal runs to its manger, but something has fallen upon the floor! The horse was luxuriating in hanging back to the full extent when surprised. The sudden start jerked the halter rein, and the result is the free portion of the tongue falls from the mouth severed by the rope.



ABUSE OF THE HALTER.

These are lamentable instances of the general behaviour of

grooms to the creatures entrusted to their care. Nothing is so corruptive as misplaced authority. A little mind knows no difference between the possession of power and the indulgence of tyranny. The use and the abuse are synonyms to the ignorant; and the sins committed principally reside with him who places the life Heaven has entrusted to his care in such unworthy custody.

When a tongue is partially divided do not insert sutures of any kind. Metallic sutures wound the fleshy palate, and silk sutures soon slough out. Neither, therefore, does good, and each serves to confine the food which enters the division. Foreign matter irritates a wound and retards its healing. Consequently, do nothing to the tongue when partially divided. Feed the patient on gruel until the healing is complete, and wash out the mouth thrice daily, with some chloride of zinc lotion, one scruple of the salt to a pint of water, after the manner described in the preceding article.

Should the tongue be separated to that extent which divides the vessels, then with a knife remove the lacerated part, which otherwise being deprived of support must slough off. Still do nothing to the tongue afterwards. Feed on thick gruel and wash out the mouth with the lotion. A horse with half a tongue will manage to eat and drink, but some food is spilt and some left in the manger. Constant dribbling of saliva is the chief consequence of such an injury. This is unpleasant, and arises from deglutition being injured. A horse which has had the tongue lacerated only, but not divided, for ever retains the evidence of the injury; and as the food is apt to accumulate at the point of union, the animal ever after demands attention subsequent to every meal.

THE TONGUE HEALED AFTER HAVING BEEN DEEPLY CUT BUT NOT SUNDERED.

The jaw has been divided to show the injured tongue, as it would appear in the mouth.

a. The indentation at the seat of injury, and which will remain so long as life shall continue.

TEETH.

Cutting the permanent teeth seems, in the horse, to be effected at some expense to the system; it was a favourite custom with the farriers of the last century to trace numerous affections to the

teething of the animal. Further inquiries have proved our grandfathers knew positively nothing about those growths, concerning which they assumed so much.

The cutting of the tushes and incisors may be associated with acute inflammation of the membrane covering the jaw. When such is the case the congested spot should be lanced; if this trivial operation be not resorted to at once, the membrane is likely to thicken and imprison the tush within it, when constitutional derangement or chronic irritation of the part is likely to supervene.

Neither tushes nor incisors are known to be exposed to other accidents; it is, however, different with the molar teeth. These teeth consist of three components; bone or ivory constitutes the chief bulk of the organ, and over that is spread a thin covering of inorganic enamel, the whole being invested with a fibrous coating of crusta petrosa. The enamel is the material on which the tooth depends for its cutting properties; the manner in which the edge is preserved deserves attention, for the bricklayer's trowel appears to have been suggested by it. A thin coat of hard but brittle enamel is held between the two other bulky and tough substances, just as a thin layer of steel is protected by coatings of yielding iron in the house-builder's instrument.

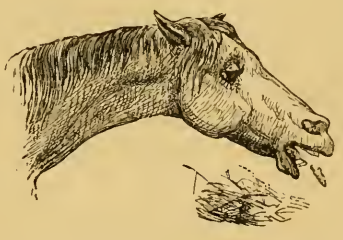
The highly organised crusta petrosa is often injured. To understand this, we must first comprehend the vast power which urges the jaw of the horse. The motion resides entirely in the lower portion of the skull, which is moved by strong, very strong muscles, going direct from their attachments to their insertions. No force is lost by the arrangement, and no less a motor power was required to comminute the hay and oats on which the horse subsists. The machinery seems to be admirably adapted to its purposes, and to be so strongly framed as to defy all chance of injury. Man, however, has a mighty talent for evil; it does not always suit the convenience of the groom to sift the pebbles from the grain; corn and stones are hastily cast into the manger, and the poor horse, having no hands to select with, must masticate all alike. The reader can imagine the wrench which will ensue, when a flint suddenly checks the movement of the molar teeth. The crusta petrosa is bruised upon the large fang of the tooth. Disease is established, and sad toothache has soon to be endured.

Then there are the effects of the powerful acids in much favour

with most grooms and too many veterinary surgeons; moreover, there are the sulphates, which in every possible form enter into veterinary medicine; the nitrates, likewise, are much esteemed and are given in enormous doses. All of these must affect the crystalline enamel of the molar tooth. A small hole is first formed, into this the food enters and there putrefies—caries and toothache are the result.

A HORSE WITH TOOTHACHE.

A horse, with toothache, upon certain days sweats and labours at its work; saliva hangs in long bands from the under lip; the countenance is utterly dejected; the head is carried on one side or pressed against some solid substance, as a wall. The food is "quidded," that is, it is partially masticated, when, from acute agony, the jaws relax, the teeth separate, the lips part, and the morsel falls from the mouth, more or less resembling what is termed "a quid of tobacco."



A HORSE QUIDDING, OR ALLOWING THE FOOD TO FALL FROM ITS MOUTH SUBSEQUENT TO MASTICATION.

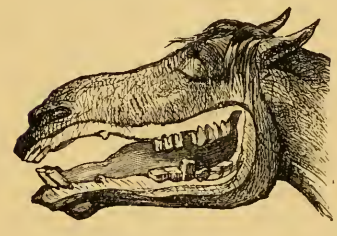
Upon other days the animal is bounding with life and spirits; the movements are light, and the motions are expressive of perfect happiness. The head is carried jauntily; the lips are compressed; the saliva ceases to exude; the food is devoured with an evident relish, and the general health appears to be better than it was before the strange disease. The continuance of such bliss is, however, very doubtful; the different stages often will succeed one another with vexatious rapidity.

If nothing be done, the horse alternates between anguish and happiness for an unascertained period, when all acute symptoms apparently cease. The lips, though no longer actually wet, are not positively dry; the food is often eaten, but as time progresses a sort of gloom hangs about the animal, and deepens every day. The horse seems never free from some unaccountable torture; more time is now occupied in clearing the manger; then the hay may

be consumed, but the oats remain untouched. These last are found soaked in apparent water; the fluid turns out to be saliva; the symptoms by degrees become more severe; a strangely unpleasant odour characterizes the breath; the flesh wastes, and the animal ultimately exhibits hide-bound.

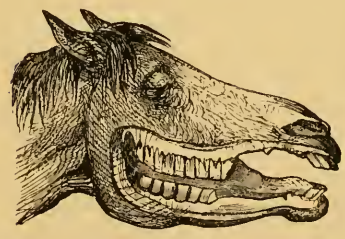
This stage being attained, and the proprietor becoming much perplexed, he is one morning informed by the groom, who displays many nods and winks, of a certain mysterious recipe for a wonderful ball that never fails, but always cures. The potent bolus is sent for to the chemist, and after sundry explanations is compounded. The groom, stiff with pride, takes the magic morsel; it is pushed rapidly into the horse's mouth; an exclamation from the man follows the disappearance of the hand, which is retracted bathed in blood.

To afford time for the writer to explain this incident, the reader must vouchsafe some patience. The horse's molar teeth are miniature grindstones. To supply the wear and tear of so violent a service, the molar teeth, originally, have enormous fangs, and as the eating surface is worn away, the fangs are thrust into the mouth by the contraction of the jawbones.



A MOLAR TOOTH HAS BECOME VERY LONG FROM THE WANT OF ATTRITION IN THE OPPOSING JAW.

Caries at first pains but at last destroys all feeling or life in the tooth; the dead organ ceases to possess any vital quality; it loses all power of self-preservation, and is a mere piece of dead matter opposed to a living agent. In consequence, it breaks away, while the opposing molar projects more forward from the absence of attrition. The healthy tooth at last bears against the unprotected gum, upon which it presses severely, and provokes the greatest agony. The animal endeavours to prevent the prominent tooth from paining the jaw by masticating entirely upon the sound side. Hunger is slowly, and perhaps never, satisfied by such imperfect comminution; the outside of the



THE MOLAR TEETH HAVE BEEN GROUND SLANTING, AND HAVE SHARP EDGES, FROM THE HORSE MASTICATING ONLY UPON ONE SIDE.

upper molars and the inside of the lower molars become slanting; the first, being almost as sharp as razors, wound the membrane of the mouth and lay open the hand which is thrust into the cavity.

If the disease be still neglected and permitted to increase, the stench grows more formidable; nasal gleet appears; the discharge is copious, accompanied by a putrid odour; osseous tumours commence; the bones of the face are distorted; the eye is imprisoned, and ultimately obliterated within the socket by actual pressure; eating becomes more and more painful, until starvation wastes the body and reduces the horse to a hide-bound skeleton.

If such a case be taken early, its cure is easy and certain; the dead tooth must be extracted, and the prominent molar shortened by means of the adjusting forceps and the guarded chisel. Then the sharp edges must be lowered by the tooth-file, and, if these things appear to occupy time, it is better done at two or even three operations than unduly prolong the agony of a sick animal. This being accomplished, all is not ended. The horse's mouth must from time to time be again and again operated upon; nor will the creature offer much opposition to the proceeding, if only proper gentleness be observed.

Aged horses, from the contraction of the lower jaw (which change is natural to increase of years in the equine race), frequently have their upper molars ground to a knife-like sharpness. They wound the inside of the cheeks, cause a disinclination to eat, and provoke a dribbling of saliva. The cure is the tooth-file, which should be applied until the natural level is attained. This should be followed by the frequent use of the wash recommended for *aphtha* or by the chloride of zinc lotion.

It may probably provoke a laugh among gentlemen and horsemen to read of toothache in the horse. Few, very few grooms may have witnessed or have noticed such a disease, but the fact exists; it is, indeed, a cruel reality to the animal which experiences it. The ignorance of stablemen can establish nothing, for they are, as a class, equally presumptuous and ignorant; they have seen the horse for years, and yet are acquainted with neither the natural ailments nor the proper treatment of the animal. The toothache is to the creature a most agonizing disorder. We have only to look at the healthy horse to observe how exquisitely it is clothed, how finely it is framed, to imagine how sensitive must be the body.

In fact, fear would be the proper name for what horsemen commonly call courage—the fast trotter and galloper, when going at top speed, does so through fear. The highly nervous temperament should convince any man of the truth of this assertion. The horse, when he shies, often makes a rush immediately afterwards; it is not courage but fear that causes him to increase his speed. He was made an animal capable of rapid hearing and quick locomotion, in order that, in a wild state, he might perceive the approach of wild beasts, and escape them by his swiftness. The horse is one of our most timid animals—although, perhaps, to the non-observant he may appear to be a creature of great courage; but, as before said, those features which seem to denote courage are in reality a timidity which the most cowardly of mankind never conceived.

SCALD MOUTH.

This is an accident which occasionally occurs where grooms are too ignorant, or too thoughtless, to read the direction labelled upon every bottle sent into the stable. Potent fluids are sometimes transmitted pure, in small bottles, though the custom is highly reprehensible, nor is the practice bettered because the label orders the contents to be mixed with water before the medicine is administered to the horse. Grooms are generally careless, and proverbially in a hurry. One of them enters the stable to give the drench, sees the bottle, seizes it in haste, calls the helper nearest the stable door, and, with such assistance, pours the liquid fire down the animal's throat.

The mouth is, by the potent drug, deprived of its lining membrane, and the stomach is lastingly injured; even if the dose be too small to occasion death the interior of the mouth is rendered raw. Fortunate is the man who can be certain the evil there begins, and extends no further; but who can calculate the effect upon delicate internal organs? The mouth may be healed; but who can ascertain the state of the deeper injury? Animals are treated as though their sensibilities were not affected by any medium pain; something must be visible before the groom sanctions the right in his charge to be restless. All signs and motions denoting a gnawing agony, but not expressive of overpowering anguish, are visited with chastisement.

The groom is not entirely to blame. The fault resides with his superiors, whom the servant apes. The sin rests with those who (unable to keep a stud-groom) think their duty is discharged by a daily scamper through the stable before they go to business; with those who, by their manners, corrupt the groom's simplicity, while, by a strange costume, they induce the ignorant fellow to regard the badge of his disgrace as the upholder of his pride. To the upper classes, the shortcomings of stablemen cling; with the superiors, whose example should instruct, rests the real blame of the servant. With educated men abide the errors of the ignorant.

After a scalding drench, an unusual redness declares the state of the mouth; a quantity of saliva flows from the restless lips, which are constantly in motion; they are being moved perpetually up and down, and are always parting with a smack. The food, for a time, is rejected, but good gruel, if cold, is generally taken freely. Boiled roots should constitute the nourishment for two months afterwards, the mouth being all the while washed with the application recommended for aphtha.

SCALD MOUTH.

No immediate danger is to be apprehended from scald mouth. The stomach is more disposed to assume chronic than acute disease. Probably, the temporary services of the animal might well be dispensed with, and much might be gained by an extra month's continuance of the prepared food. At all events, the experiment would be intended to ward off a possible evil; and, if we are to believe at all, the motive, being based on goodness, the act would not be without its reward.

CHAPTER IV.

THE NOSTRILS—THEIR ACCIDENTS AND THEIR DISEASES.

COLD.

It should not excite surprise if the horse, though generally strong and exposed to every abuse, is occasionally subject to the disease,

SELLING "A CAPTAIN," AS ANY HORSE WITH A NASAL DISCHARGE IS CALLED BY THE LOW DEALERS.

which in man is almost the property of the delicately nurtured. The animal exists in a stable commonly kept at a high temperature by means of contaminated air; it is taken thence into a wintry atmosphere to stand for an uncertain period before the master's door. There it has to remain, inactive, shivering in the blast, until it suits the proprietor's convenience to come forth; next, it is pushed along till the perspiration bedews the sides. Then it has

to remain, generally unprotected, in the cold, until some business is transacted, when it is flurried home again, and often has to wait afterwards till it suits the groom's leisure to dry the reeking frame.

Can it create astonishment if an animal so treated exhibit that nasal affection denominated "cold?" The case is similar with hunters. They leave hot stables to join the distant meet. Game may be soon started, or "the find" may occupy hours. At last men, horses, and hounds scamper off; the fences are cleared; the fields, though they be swampy or ploughed, are crossed at the longest stride. The pace is killing while it lasts; at length comes a check. That saves many a steed whose breathing ability was well nigh exhausted; but every animal has to shiver till the "view holloa!" again summons the assembly to motion.

How often does my lady's "carriage stop the way?" And how long have the horses to stand in the rain before it ceases to do so? How frequently does the gig or brougham linger near the curb, while another glass to good fellowship is drained? Then, we have to reflect upon the breathing forms harnessed to hired carriages; how the street cab rests in storms! How, day or night, the horses must be exposed to all the varied seasons? Unsheltered from the sun; with no protection from the frost! Let the reader reflect upon this and say, not if it be wonderful that a few horses exhibit the affection denominated cold, but whether it is not a legitimate matter for surprise every second horse is not thus affected. At the same time, we all know that habit becomes second nature, and that horses get used to exposure: it is noticed among cab-horses, and, strange to say, these animals, sometimes old too, are among the healthiest of equine species, and are the hardest worked. The late Admiral Rous once told the reviser that, in his opinion, the reason cab-horses were always in such good health was owing to the fact that their exposure in the cab rank necessitated their breathing fresh air for a longer period during the day than other animals. It is, moreover, a fact that colds are induced, not by going from a warm to a cold medium, but being taken from a chilly atmosphere to a hot stable: by being removed from a bracing medium to a depressing influence. The highly fed and seemingly well cared for horse is more prone to cold than the animal that has to rough it, and is, to a certain extent, neglected. Colds arise more from ill

effects produced by bad drainage, ineffective ventilation, and overheated stables, than from outdoor exposure; consequently it is better to let stables be cold than badly ventilated, for within such the inmates' bodies can be kept warm with extra clothing.

A mild cold, with care, is readily alleviated. A few mashes, a little green-meat, an extra rug, and a day or two of rest commonly end the business. When the attack is more severe, the horse is dull; the coat is rough; the body is of unequal temperatures, hot in parts, in places icy cold. The membrane of the nose at first is dry, and pale or leaden coloured; the facial sinuses are clogged; the head aches; the appetite has fled; often tears trickle from the eyes, simple ophthalmia being no rare accompaniment to severe cold, till at length a copious defluxion falls from the nostrils without immediately improving the general appearance of the animal.

A HORSE'S HEAD EXHIBITING A COLD.

The treatment is plain. Cold is due to the devitalisation. The nerves at the part affected lose much of their influence, owing to which the mucous membrane becomes congested, and the adjacent tissues are soon similarly involved. All depletion must be avoided. The invalid should be comfortably and warmly housed, should have an ample bed, and the body should be plentifully clothed, and perfect ventilation must be insured. Then, a hair bag, half as long and half as wide again as the ordinary nose-bag, should be buckled by a broad strap on to the sick horse's head; into the bag should be previously inserted one gallon of yellow deal saw-dust; upon the saw-dust, through an opening guarded with a flap upon the side of the bag, should be emptied a kettle of boiling water, the superfluity of which may run or drain through the hair composing the bag.

The boiling water ought to be renewed every twenty minutes, as the bag should be retained upon the head for an hour each time. Should not yellow deal sawdust be obtainable, procure some of common deal, upon which last pour one ounce of spirits of turpentine. Mix well and thoroughly before you apply the bag to the head; but, should not a proper apparatus be in the stable,

then it is better to forego the steaming, as the common nose-bag is far too short and too tight for safety. The cloth, moreover, is apt to swell and not to allow the free passage of the water. Sad accidents have ensued upon the incautious employment of the ordinary nose-bag for steaming purposes.

STEAMING THE NOSE OF A HORSE WITH COLD.

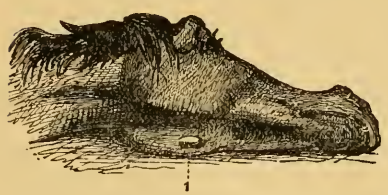
If the horse appears to be weak, and there is the slightest suspicion that the weight of the appliance for the time directed may tax the strength, let some substance, as a stool, a form or chair be placed beneath the bag. The animal will require no teaching to understand the use of the intended resting-place. As the weight begins to drag, the head will be lowered, and after a very brief space the steaming apparatus will be found reposing upon its intended support.

While the membrane is dry, use the steaming-bag six times daily. When a copious stream of pus flows from the nose, its application thrice daily will be sufficient. At the same time, let the food consist of grass with mashes, to regulate the bowels and subdue the attendant fever. Give no medicine; but the discharge being established, three daily feeds of crushed and scalded oats, with a few boiled carrots added to them, will form an easily digestible diet. Likewise, should the weakness be great, give night and morning, in a pint of thin oatmeal gruel, one drachm of carbonate of ammonia. Good nursing, a loose box, fresh air, warmth, and not even exercise till the disorder abates, are also to be commended. It will also sometimes lead to other diseases, as those of the larynx, air passages and lungs. Should the symptoms deepen, the treatment must be changed; the lesser affection (*cold*) being swallowed up by the greater disorder, which is superadded; consequently, disregard the original ailment, taking those measures requisite to relieve the new and more important affliction.

Animals with chronic cold, or with a constant running from the nose, soon exhibits excessive weakness. Nothing taxes the

strength so much as the prolonged disorder of any mucous surface.

All which ignorant people know of glanders is, that the disease is accompanied with a nasal defluxion. The more cunning in horse flesh, likewise, are aware that glanders causes the lymphatic gland within the jaw to swell, or, that a glandered horse is always, as such people assert, jugged.



THE HEAD OF A HORSE WITH 'A JUG,' OR WITH ONE OF THE LYMPHATIC GLANDS OF THE THROAT SWOLLEN.

1. The enlarged lymphatic within the jaw.

Now, both the discharge and the enlargement are generally present during inveterate cold. Animals of this kind are sold to the unwary as sound horses. The vendors believe the quadruped to be glandered, or to be affected with the most terrible of equine diseases, and the purchaser wants knowledge to perceive the contrary.

Let, therefore, no man who buys "a captain" (which is the slang for a horse with nasal discharge), become alarmed and, to some member of the gang from whom it was bought, re-sell his bargain for a few shillings. Large sums are often made by thus disposing of a diseased animal for a high price; then, directly afterwards, frightening the purchaser with a view to buying back at a cheap rate the supposed glandered horse. Always take the animal to the nearest veterinary surgeon. Have the quadruped examined; and, if really glandered, order it to be immediately destroyed. Listen to no offer; but have the order obeyed.

A gentleman, once attending a sale, bought for a large price a fine black horse. No sooner had the money been paid than a man came up and informed the purchaser of the real character of his recent acquisition, offering to take the bargain off the new owner's hands for fewer shillings than pounds had just been given. The proposal was indignantly refused. Others came, but all encountered the same answer. The terms were gradually heightened, till double the money expended was tendered. The horse, however, was destroyed; thus, a gang of swindlers were deprived of a property which they owned had, for the last year, earned them an easy thousand pounds.

Every man, however, must not anticipate so favourable a pro-

posal. The animals, mostly, are worthless, and would only be re-bought for a very trifle; the swindlers, generally, being perfectly indifferent whether their eyes ever again behold a creature which can be easily replaced.

NASAL POLYPUS.

A polypus, when not otherwise distinguished, represents a pear-shaped body, which has little sensation but great vascularity. It is not malignant, and its growth is generally rapid. By the increase of its weight, the polypus ultimately hangs from the spot where it grew and becomes pendant by a sort of stalk, formed principally by the blood-vessels enveloped in the membrane which coats the tumour. Such growths are peculiar to mucous tissues, or to all the cavities of the body which communicate with the external air. With regard to the horse, polypus is mostly met with in the nostrils.

A POLYPUS.

The growth can be removed in more ways than one, but what kind of instrument is required for the operation cannot be determined until the exact position and extent of the polypus has been ascertained. The late Professor Varnell used to employ a knife with an angular blade. By employing this instrument he could excise the tumour with a single cut, and no doubt when this knife can be used it represents a quick and efficient means of eradication.

Torsion is more repulsive in appearance than in reality. A pair of scissors having sharp curved claws, at the expanded ends of blunt blades, are employed. The tumour is seized by the claws, a little pressure is made, and, at the same time, the scissors are drawn slightly forward. By that means the points are driven into the substance and a firm hold is obtained. The handles of the scissors are next fastened together with wire, or not, at the pleasure of the operator. The scissors are afterwards made to revolve several times, and with each revolution they oblige the polypus to turn upon its pedicle, which motion first twists and ultimately

POLYPUS FORCEPS OR SCISSORS.

ruptures it. The growth is thus removed. As the polypus is not very sensitive, and the operation should be soon over, small suffering is inflicted, when compared with the permanent ease which the proceeding ensures.

The operation of traction, or dragging the tumour out of the nostril, has been practised by some practitioners with success. It consists in the passing up the nostril an instrument, not very dissimilar to the scissors above depicted, and grasping, as with a pair of pincers, the tumour, and then by force removing it bodily from its base of insertion. This is, however, a cruel and barbarous operation, and is seldom, if ever, adopted nowadays. At the same time, polypi are represented in so many forms and disposed in so many modes that sometimes the use of cruel instruments is necessary. Ligature however, where it can be used, is generally preferred; because the employment of it is not so sudden and, consequently, not apparently so violent; because no blood, generally, follows the removal, and therefore there is no visible evidence of pain. The writer is not certain it is the least painful of the methods proposed; the relief is delayed, although the appearance and the appetite of the animal are assurances that nothing approaching to agony is inflicted.

For ligature procure a fine, hollow tube, having at one end a

DIAGRAM OF A TUBE FOR THE REMOVAL OF NASAL POLYPUS.

cover made to screw on and off; the opposite extremity must be open, and should have a cross bar attached externally, one inch from the termination. Upon the cover two holes must be bored, each large enough to admit a fine wire; to arm this instrument, which should be about eighteen inches long, procure a piece of zinc wire one yard and a half long; push this through one of the holes on the unscrewed cover and down the tube; screw on the cover; fasten the projecting end of the wire to the cross bar; return the wire through the other hole, and, passing it down the tube, leave it hanging free. Form of the wire a loop, large enough to surround the polypus; pass it gently over the head of the

growth; by means of the tube, work the loop upward, tightening the wire as the size of the polypus diminishes. When the wire is round the pedicle, fix it by winding it also over the cross bar; then slowly make turns with the tube, observing the growth while so doing. When the tumour changes colour, or the animal exhibits pain, discontinue all further movements; release the wires from the cross bar and withdraw the tube, leaving the ends of the ligature protruding from the nostril and turned up on one side of the face.

Order the horse to be fastened to the pillar-reins that night, and to be watched while feeding. The next day, if the tumour do not feel sensibly cold and has not evidently lost the living hue, reinsert the wires into the tube, fix them again on the cross bar, and give another turn or two. If small alteration be subsequently observed, the same evening the proceeding may be repeated; but, when death appears confirmed in the tumour, twist the tube till the pedicle gives way.

The advantages possessed by this invention are, firstly, the ability of twisting a ligature tight when the growth is partly removed from view. Also, in the adoption of wire, which will retain the form it is placed in and remain unaffected by the moisture natural to the nostrils. Moreover, the tube can be made without the screwing head-piece, and answers quite as well, or even better, when solid. If made without the screwing head-piece, it can assume a flattened form, and it is somewhat easier to introduce; but the wire, in that case, must have both ends pushed through the holes down the tube.

The bleeding polypus is not met with in the horse. For that polypus which sprouts from the nasal membrane and extends to the fauces, impeding respiration and deglutition, appearing like a disease of the structure, to which it is attached by a broad base, nothing can be done. It grows fast, and in a short time renders longer life a larger misery.

The polypus, which admits of removal, is a smooth, moist, glistening and vascular body. It greatly impedes the breathing. These growths have been known to push out the cartilaginous division of the nostrils until the once free passage was all but obliterated. They provoke a constant discharge of pure mucus, and on that account the horse, thus affected, has been condemned

as glandered. However, the truth may be at once recognised by closing the nostrils alternately. It is then easy to discover which cavity is affected, as a resistance is provoked by stopping the free channel, which bears no resemblance to glanders. To bring down the polypus, cough the horse, by making gentle pressure upon the topmost part of the windpipe; for, during the stages of glanders, any appearance at all resembling polypus is never present. It was usual, the instant the growth was visible, to transfer it with a tennaculum. This, however, like other barbarities, only did harm. The substance of a polypus is easily rent, and it bleeds freely.

A TENNACULUM.

The bleeding concealed much which after proceedings rendered necessary should be plainly seen. It is better, when sufficient room is not left for operation or inspection, to proceed with greater boldness, so as to ascertain the advantages likely to result from further measures. Then throw the horse, and with a probe-pointed, straight bistoury, slit up the nostril upon the outer side. That done, release the animal till all bleeding has ceased, when the endeavours may be renewed with a better prospect of success. Afterwards, close the incision with a double set of sutures (one set to the true nostril and another for the false nostril). Apply to the wound the chloride of zinc wash, and in a short time all will be healed.

NASAL POLYPUS.

NASAL GLEET.

This terrible affliction is suppuration of the mucous membrane, lining the facial sinuses. It rarely occurs in the stable; but when it does the cause mostly is to be traced to the projection of some molar tooth, and the disease is then generally hopeless. The

pressure of the tooth has provoked irritation of the bone. The sinuses are no longer hollow spaces, but have been converted into cavities crowded with bony network. To cleanse them in that condition is impossible, and death is the only resort left to a humane proprietor.

The malady seldom, excepting as the result of injuries caused by blows inflicted on the skull in the region of the nasal sinuses. At grass, horses during their frolics may kick one another, and the hoof may find its way to a companion's head; and if a shoe be on it at the time a serious wound will give evidence of the mishap. A blow with the handle of a whip, or any kind of heavy implement, will have the same effect in ultimately inducing soft and swollen faces, when percussion draws forth the same sound as that we notice by tapping on a pumpkin.

NASAL GLEET.

Besides the distortion, the next prominent symptom attending nasal gleet is fœtor. Discharge is not always present. It is irregular in its appearance, but can generally be made to flow by a brisk trot or by some tempting food being placed upon the ground. Stench and discharge, often coming only from one nostril but occasionally from two, are likewise symptomatic of the same disorder.

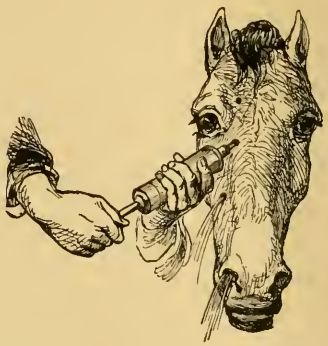
Pus is, naturally, the blandest secretion of the body; but being confined, it corrupts, and then smells abominably. The blow which started up the secretion injured the bones forming facial sinuses. Those cavities open to the nostril on either side by two comparatively small flaps, slits, or valves. These are their only means of communication with the external atmosphere; and through these valves all the pus must flow. Is it surprising if such structures occasionally become clogged, till the accumulated secretion, or the increased breathing or the position of the head, obliges the passage to give way?

The chances likely to result upon treatment are about equal, but the process is generally slow. The trephine has to be employed upon the facial sinus, and circular portions of bone have to be removed. Into the openings thus made is to be injected, by means of a pint pewter syringe, half a gallon of tepid water, or

water heated to 96 degrees, in which half a drachm of chloride of zinc is dissolved. The chloride of zinc not only destroys the fœtor, but also disposes the membrane to take on a new action.

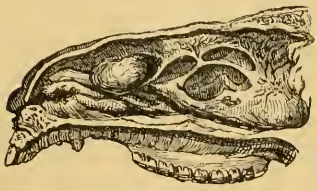
The injection, however, only cleanses the sinuses, and the nose also becomes involved by the disease. It is usual to describe

THE TREPHINE, BY MEANS OF WHICH A CIRCULAR PIECE OF BONE MAY BE REMOVED.



INJECTING THE HEAD OF A HORSE FOR NASAL GLEET.
Copied from a work by La Fosse.

the turbinated bones, or the fragile bones situated within the nostrils, as thin osseous structures, making numerous convolutions



THE TURBINATED BONE WITHIN THE NOSTRIL OF A HORSE AFFECTED WITH NASAL GLEET; PARTLY ABSORBED BY PRESSURE AND PARTLY DISTENDED BY AN ACCUMULATION OF CONCRETE PUS.

PART OF A HORSE'S HEAD WHICH HAS THE BONE TREPHINED SO AS TO ENABLE THE SURGEON TO EMPTY THE TURBINATED BONE. THE COURSE OF THE NERVES IS SHOWN.

upon themselves. They favour such an opinion when viewed *in situ;* but, being removed, are found to consist of ample sacs or bags which the external layer concealed from view. These hidden spaces soon fill with pus. Here it remains; the position of the head even cannot entirely dislodge it, as the head is seldom carried perpendicularly. Here the pus hardens or concretes, until by degrees the cavities are filled with a foul and solid matter.

Such a storehouse of disease may thus be opened and cleansed. Mark with chalk or charcoal the spot in a line with the infra-orbital foramen, and a little anterior to the third molar tooth. The positions of both may be clearly ascertained by feeling externally upon the head of the living horse. At that place cut through the skin, but no deeper. Make a T incision, only reverse the letter ⊥. Withdraw the two flaps of skin; remove by means of blunt hooks any structures that conceal the bone, upon which last, when clear, employ the trephine.

The side of the face being opened, insert through the opening a steel probe. Thrust it through the concrete pus, and strive to discover the most depending portion of the sac. To this spot, if possible, apply a hollow metallic tube about twelve inches long. This instrument has a horn-shaped mouth at the blunt extremity and a fine sharp steel saw at the other. The saw being fixed upon the spot indicated by the probe, and a few revolutions being given to the horn-shaped end between the palms of the hands, a circular portion of the bony network which characterises the turbinated structures is removed.

FIG. 1

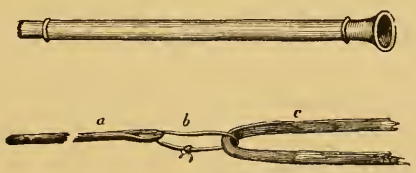


FIG. 2.

Fig. 1. The hollow metallic tube, having at one extremity a horn-shaped mouth for the convenience of inserting a gum elastic probe, and at the other end a fine saw for cutting through the turbinated bone.

Fig. 2. *a*. A gum elastic probe to be threaded through the metallic tube, and so forced out of the nostril. *b*. A portion of string passed through the eye of the probe and forming a loop. *c*. The tape which constitutes the seton passed through the looped string.

Now, so soon as this is accomplished, force through the hollow instrument last employed an elastic probe armed with a piece of linen tape. The probe being about eighteen inches long will, by the application of very gentle force, soon glide through the opening last made and out of the nostril. The tape is by traction made to follow, and the ends being tied a seton is established. By the daily movement of this last contrivance, the concrete matter may effectually be displaced.

This being finished, the syringe is to be daily employed in forc-

ing the air from the lungs, when the noise emitted is noticed during expiration—the effort made in expelling the used-up gases from the lungs.

The lymphatic glands under the horse's jaw occasionally enlarge; but as the affection is destroyed the swelling will disappear, and half-an-ounce of liquor arsenicalis sprinkled twice daily over a feed of crushed corn will, together with liberal food, commodious and healthy lodging, expedite cure.

HIGHBLOWING AND WHEEZING.

In order that the various sounds emitted through the air passages during the function of respiration may be understood, it will be necessary to give a brief description of these respiratory efforts. The lungs exist for the purpose of inhaling oxygen gas contained in the air, which, on entering the lungs, unites with the carbon of the system to form carbonic acid, which, with other spent gases, is expelled from the lungs. The effort of inhaling oxygen is that of inspiration; that of expelling the used-up gases has been denominated expiration—their combined action that of respiration. The entrance of oxygen into the system cleanses the body of its impurities, by oxygenating the lungs and removing the carbon from them, which is expelled during the act of expiration. The sounds emitted during these two efforts are different and distinct the one from the other; and in disease the difference is more marked, for instance in highblowing and wheezing. Both affections are known by the noises to which they give rise.

Highblowing consists in a noise caused by the violent expiration of air during its passage through the nostrils, whereby a bur-r-r-r-ing kind of noise is made. This sound children are fond of imitating when they play "horses;" but in the animal it is unpleasant to the equestrian, because by it the nostrils are cleared, and by it the trousers of the rider are often soiled. Besides, fashion at present favours a quiet steed. For this habit there is no remedy except throwing up the horse for harness purposes, in which employment the habit is not generally regarded as objectionable. Highblowing can only be regarded as possibly arising from a derangement of form, and not from disease; in fact, highblowers possess the finest wind, and we have known some great stayers

The celebrated Eclipse was a highblower, and, as is well known, he was the most famous horse of his day.

Wheezing is a thin, whistling noise, heard only during inspiration. It is provoked by some impediment to the breathing, and the cause always resides in the nasal chambers. It is astonishing how small an obstacle engenders this affection. This, like the former peculiarity, is equally incurable. It is easy to stop each nostril and thus to tell from which the noise proceeds; yet, for its removal, the affection demands a purely experimental destruction of parts, so ample that even veterinary science shrinks from the attempt.

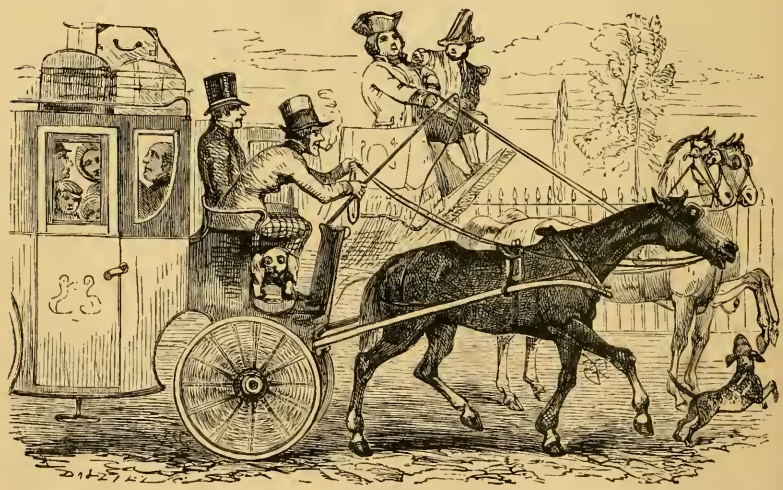
However, to such chances the life of a horse is exposed. The indulgence of a habit which adds to the animal's beauty in the eyes of the foot passenger is regarded as objectionable in one position, while it is admired in another situation; the advent of the smallest excrescence in a large cavity can deteriorate the value of a life. A loss of value entails loss of caste. The life descends to harder work and lessened care. The first step taken, the others rapidly succeed; for it cannot be asserted that, as a general rule, the lower classes appear to advantage when the custody of a beautiful animal is morally considered.

CHAPTER V.

THE THROAT—ITS ACCIDENTS AND ITS DISEASES.

SORE THROAT.

THERE is, among horse-owners, much dispute as to the proper mode of harnessing a horse. Gentility has no feeling either for itself or with any of the many lives by which it is surrounded;



WITH AND WITHOUT THE BEARING-REIN.

this vice of modern time delights in laboured imposture, and is always best pleased when it is mistaken for something that it is not. Gentility favours the use of a bearing-rein in the horse's harness. The object is to keep up the head, and to give to an animal with an ewe neck the aspect of one having a lofty crest. The artifice is very transparent; it should deceive nobody save

him who is foolish enough to adopt it, but it deprives the poor horse of no little of its natural power. Gentlemen's coachmen complain of the work when their horses are driven ten miles daily, although the distance may be repeatedly broken by visits and by shopping. The cabs of London can only employ the horses which gentlemen have discarded; with these last vehicles, however, no bearing-reins are adopted. The cast-off animal that previously fagged over ten miles, when reduced to the rank, has to pull loads which no genteel carriage would carry, and to travel a sufficient distance to pay horse, driver, conveyance and proprietor. In the possibility of such a contrast is, perhaps, best exemplified the cruelty of the bearing-rein.

When the fine structure of the horse's body is regarded, and we reflect that a creature of so beautiful a frame is by man's will taken from the fields, where every bite of grass is of a different flavour, now hot and pungent by an admixture of the buttercup, then cool and bland by the marsh-mallow mingling with the morsel, where, unknown as yet to toil, such sustenance is sufficient for growth and idleness; when we consider that an animal is suddenly snatched from such a diet, every mouthful of which was endowed, not only with a varied taste, but with a change of perfume; when we feebly conjecture how grateful this ever-varying savour must have rendered herbage to any being possessed of the admirable sense of smell, with which the equine species are gifted, it can create but small surprise that, when taken into stables, put to exhausting labour, and day after day made to eat a stinted allowance of dry food, the sameness of the diet and the change in habit should occasionally derange the digestion. Sore throat is, however, frequently a sign of some graver disorder; the affection should, therefore, be cautiously treated as a local malady.

When it is present, the symptoms are a constant deglutition of saliva, a want of appetite, accompanied by an inability to swallow liquids. The pail being presented, the act of drinking is accomplished with evident effort; the drops are forced down by a series of jerks, which are often made more emphatic by an audible accompaniment. Notwithstanding this labour, only a portion of the fluid enters the gullet, the greater part returning by the nostrils.

So soon as this is observed, throw the horse up, for sore throat

is always attended with weakness. Clothe fully, bandage the legs, place in a well-ventilated and amply-littered loose box; feed upon green meat for a couple of days at the same time, always having present a pail of thick, well-made gruel, which should be

A HORSE WITH SORE THROAT ENDEAVOURING TO DRINK.

regularly changed thrice daily. Morning, noon, and night, a pottle of scaled, bruised oats, intermingled with two or three boiled carrots, should be placed in the manger.

Frequently this is all required, and the disorder is well cured which yields without medicine. Should the bowels prove obstinate, and after the second day continue constipated, a mild dose of solution of aloes should be administered.

Solution of aloes . .	Four ounces.
Essence of aniseed . .	Half-an-ounce.
Water	One pint.

Mix, and give.

This, with the diet previously recommended, is rarely required, as the food alone seldom fails in relaxing the body. However, should the sore throat remain, dissolve half-an-ounce of extract of belladonna in one gallon of water. Hold up the head of the animal, and put half-a-pint of this liquid into the mouth; allow the fluid to be retained for thirty seconds; then take away the support, and the medicine will run from the lips. Repeat this frequently, or from six to eight times during the day.

If the soreness of the throat should appear indisposed to heal,

but, on the contrary, should seem inclined to spread, lose no time in resorting to the next preparation. Permanganate of potash, half-a-pint; distilled water, one gallon—half-a-pint to be used to cleanse the horse's mouth, in the manner just directed for diluted belladonna six times daily, or—

Chloride of zinc . .	Three drachms.
Extract of belladonna .	Half-an-ounce.
Tincture of capsicums .	Two drachms.
Water	One gallon.

Mix, and use as directed for the previous recipe.

Occasionally the disease does not spread, but, spite of our best endeavours, it will remain stationary. Should no change be remarked in forty-eight hours, blister the throat. Do this with one part of powdered cantharides soaked for a month in seven parts of olive oil, adding to the whole one part by weight of camphor. Rub this oil, when filtered through blotting paper, into the throat for ten minutes in summer and a quarter of an hour in winter.

All the endeavours may be useless. Then cast the horse. Have ready some nitrate of silver dissolved in distilled water—five grains of the active salt to one ounce of the fluid. Saturate in the solution a sponge four inches wide, tied on to the end of a stick eighteen inches long. Have the sponge made as dry as possible without squeezing it. Put a balling-iron into the mouth. Insert the sponge through the iron, and, having pushed it down to the back of the tongue, rapidly press it against the side of the cavity. Be prepared for what you are about to do, and do it quickly. The operation stops the breathing, and calls forth the resistance, which is natural to impending suffocation.

The horse being released, give the following ball, in addition to the stout, twice each day:—

Powdered oak, bark and treacle, a sufficiency of each to form a mass.

If none of these measures are successful, the sore throat must be the symptom only of some greater disorder, and all local remedies, in that case, must be engulfed in the general treatment. However, it is not every measure which will cure every sore throat. In young horses, when first taken from the pure air into

the contaminated atmosphere of most stables, such affections are common. For this reason well-ventilated stables are the most important adjuncts in the case of all diseases, but more particularly with regard to sore throat. Horses, when their air passages are in any way affected, will be the better in being allowed to hang their heads over the door of their loose-box during warm weather and sometimes even in cold, for the necessity of pure air to the lungs cannot be too strongly advocated, for by it we "live, breathe, and have our being." After recovery from this affection the patient is constantly left in a prostrate condition, when, should the weather be warm, turn out into a fair pasture night and day; and allow one feed of corn, plus chaff daily. If winter be present, give every comfort to your horse in a loose-box, and supply a liberal diet. Be careful that the drainage and ventilation is perfect, for pure air will restore health better than medicine, and is quite as important as good food.

COUGH.

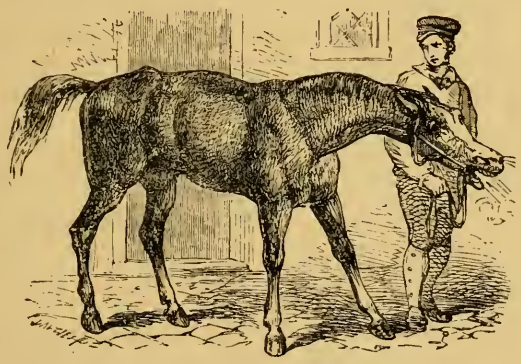
Cough is too often caused by unhealthy lodging. Few stables are perfectly drained and ventilated; the very great majority are close with impurity. No surprise then need be exhibited if the entrance to the air passages should display disease, when an animal, so naturally cleanly, is imprisoned in the space man is too thoughtless to keep uncontaminated.

The larynx is the seat of cough, when the affection exists by itself, although the annoyance is often a symptom of some other derangement, and may then spring from laryngeal sympathy with some comparatively remote organ. It may arise from a very trivial cause, as teething; or it may be a sign attendant on the worst of disorders, as farcy and glanders. Broken wind, roaring, laryngitis, bronchitis, chronic diseases of the lungs, stomach, bowels, worms, etc., etc., all attended by cough, which is more frequently present as a symptom than as a disease. Hot stables, coarse and dusty provender, rank bedding and irregular work, are the general provocatives of cough, as a distinct affection.

The name is evidently derived from the noise which constitutes the chief symptom of the disorder. Cough consists in spasm of all the muscles of expiration. The air is violently expelled, and an

explosive sound is the consequence. During this spasm, the soft palate is raised, and the breath is allowed to pass through the mouth as well as through the nostrils; the horse, as a rule, being able only to respire through the nostrils.

The characteristic noise is generally annoying to the master. Warmth, however, is popularly esteemed the cure for cold. The horse proprietor, therefore, thrusts his animal into an abode heated by impurity, only to find the annoyance aggravated. This fact is soon explained. Stables are not heated by fire or by water; their warmth is entirely derived from the fermentation of excrement. Were they well ventilated, efficiently built and cleanly kept, these



THE ACT OF COUGHING.

places, having no artificial heat, must be cold; but the owner loves warmth; it feels so comfortable; it is so nice! He does not inquire if it is derived from the right source; he hates the bother of investigating. Nothing can be proper if you are to consult medical men! They talk and discuss, but no good comes of their verbosity! And by such sayings the horse proprietor blinds his judgment, permitting to continue the evil which ignorance institutes. Chronic cough, cannot, when thus treated, amend. It continues till the membrane covering the larynx be thickened and morbidly sensitive; then the cough is an appendage to the life, and roaring is its companion.

For the cure of chronic cough, scald and crush the oats, damp the hay, and give thin gruel or linseed tea for drink. At the same time see that the air is pure; the human nose is a sufficiently good

test of atmosphere—that of the stable should not smell of horses, or of any taint whatever. If the ventilation is good, the drainage clear and the bedding clean, the interior of a stable should be as odourless as any lady's apartment.

Cough, or the noise which accompanies stages of different disorders, will be described, as the various affections of which it is a symptom are passed before the reader. Chronic cough, or the sound that follows a draught of cold water, and is heard when the horse quits the stable for the open air, is most distressing. It is a constant accompaniment during the commencement of a journey, and requires that food and lodging should be looked to. Clothe warmly, and give half-a-pint of the following, in a tumbler of cold water, thrice daily:—

Extract of belladonna (rubbed down in a pint of cold water)	One drachm.
Tincture of squills	Ten ounces.
Tincture of ipecacuanha	Eight ounces.

Mix.

If no beneficial change be witnessed, try the subjoined:—

Barbadoes tar (or common tar if none other be at hand)	Half-an-ounce.
Calomel	Five grains.
Linseed meal	A sufficiency.

Mix, and give as one ball, night and morning.

Should no improvement result, the next may be substituted:—

Powdered aloes	One drachm.
Balsam of copaiba	Three drachms.
Cantharides	Three grains.
Common mass	A sufficiency.

Mix, and give first thing in the morning.

A bundle of cut grass, every day, has done much good in the spring; so, also, has a lump of rock salt placed in the manger, during any season of the year. The horse, however, should be observed. If it eat the litter, no straw, during the day time, should cover the stall; and, at night, a muzzle should be fixed upon the animal. The cough must be more than of a simple character which does not vanish before the proposed measures are exhausted. Cut roots, also, are beneficial during this disease. The hay should

not be abundant, and should always be moistened. But, above all things, attend to the drainage and ventilation of the stable—as it is a fact beyond dispute that coughs are the result of ill-drained, badly-ventilated and impure stables, and diseases of the air passages, nine times out of ten.

LARYNGITIS.

The common cause of this disorder is foul stables. When we see the animal associated with the nobleman in his pride, and linked as the willing slave of the merchant for his profit, it does seem strange that a creature, thus connected, should be subject to disease from scant and tainted lodging. When we consider the subject from another point of view, and regard the beautiful framework, animated by the affectionate disposition of the horse, it sounds more than cruel to say the most valuable and amiable assistant man has on earth, dies neglected in age, and, during the vigour of its prime, encounters disease from the niggard provision made for its welfare. The devotion of a life ought to entitle the labourer to breathing space after the labour of the day has ended. But noblemen, professional men, merchants, tradesmen, mechanics, all sin in this respect alike. The horse, when not toiling, is pushed away into the narrowest possible limits. The prisoner is permitted only to breathe a limited quantity of the air, which nature has supplied in so great abundance and in such purity. That quantity must, from the time of close confinement, be frequently respired during the night; and, when the air of the place has become hot and heavy, the quadruped, at the command of its attendant, quits its abode for the cold atmosphere without the walls.

The pure air, which circulates about our globe, is certainly much to be preferred to the close interior of the stable. Yet, the sudden draught of fresh air acts banefully upon a part rendered delicate by abiding in a morbid medium. It operates violently upon a structure which has been devitalised so long and continuously by the impure associations of the stable. Inflammation is the result, and laryngitis is established.

The symptoms are broadly marked and prominently characterised. Dulness is present. There is a slight enlargement, which may be observed externally, and over the region of the larynx. The most

distant attempt to handle the throat produces energetic resistance. The head is carried awkwardly, as though the neck were "stiff." A short cough is frequently to be heard almost at every inspiration. At the same time, there is often to be detected a hoarse sound, which becomes a sort of grunt, when the ear is placed against the trachea. The breath is hurried and catching; the pulse is full and throbbing; while the nasal membrane approaches to a scarlet hue.

The pulse requires the first attention. It must be rendered less frequent and more soft, by drachm doses of tincture of aconite root in wine-glasses of water, which should be repeated every half hour.

THE STEAMING-BAG.
For a full description, see p. 79.

After the pulse, the breathing next demands our care. Warmth and moisture are curative and pleasant to an inflamed surface. Procure the steaming-bag, and keep it almost constantly applied. The steaming-bag in laryngitis is of the first importance. A day's delay in its use may so aggravate the disorder, as to oblige the resort to tracheotomy.

Should the steaming apparatus appear to distress the animal it must be used only for a limited period, and be reapplied after its effect has subsided. To aid its operation, some soft hay must be obtained. Soak this in boiling water and fix it upon the throat, by means of an eight-tailed bandage, a representation of which is given below.

EIGHT-TAILED BANDAGE.

A piece of stout canvas or flannel one yard and a quarter long and nine inches wide, is procured. Three slits are to be made at either end; each should be a quarter of a yard deep. This is placed round the throat and the ends are tied, four in front of, and four behind the ears.

So soon as the animal appears capable of enduring interference, the appended drink should be given, thrice daily. While adminis-

tering it, watch the horse with the utmost attention. If the slightest inclination to cough be exhibited, immediately lower the head, or the liquid may, during the spasm, be drawn down the windpipe. It is far better to lose much physic than to kill one animal. It will, generally, be more readily swallowed, if made blood-warm; on no account should the twitch be used or the jaws be forced widely asunder. The neck of the bottle should be inserted into the corner of the mouth, and the quadruped should be permitted to use its discretion as to the time occupied before each gulp is swallowed.

Infusion of squills	Two ounces.
Infusion of ipecacuanha . .	Two ounces.
Infusion of aconite . . .	Half-an-ounce.
Extract of belladonna . .	One drachm, rubbed down with a pint of warm water.

Mix, and give thrice daily.

The lodging should be a cool, well-aired and thickly-littered loose box. The legs ought to be bandaged and the body fully clothed. The food, during the violence of the disorder, must consist only of well-made gruel. It may be untouched; but, nevertheless, it must be changed thrice daily, for no one can tell when the appetite may return.

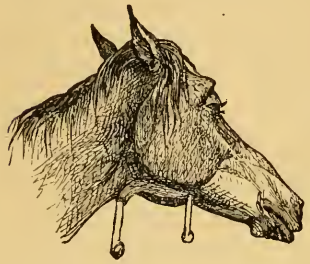
The signs of the disease becoming worse are, increased noise in the breathing; the respiration and the pulse quicken; the cough is suppressed; the nasal membrane changes to a leaden hue; the standing becomes unsteady; the horse moves about; partial sweats break forth, etc., etc.

The symptoms of improvement are, the membrane becoming paler, or more natural in colour; the cough growing freer or louder; a white, thick discharge flowing from the nostrils; the breathing, also, is easier and less noisy; together with the general demonstrations of health.

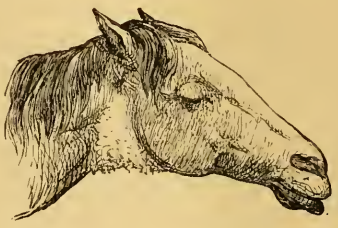
Then a little moist and succulent food may be allowed, but nothing harsh or fibrous should be presented. When the amendment is confirmed, a seton, or in other words a piece of tape, may be put between the skin and flesh, in the place indicated by one of the next engravings.

The seton should be moved daily, and ought to be kept in so

long only as is necessary for the secretion of healthy pus. That object being obtained, cut off one of the knots, and by pulling at the other, withdraw the agent. Some slight alteration is next made in the solidity or dryness of the food; and then the neck or throat is blistered, the size and extent of the blister being indicated in a subjoined illustration.



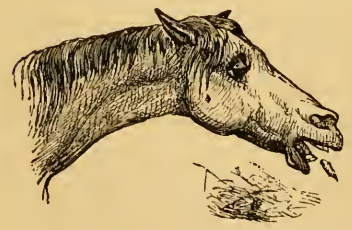
A SETON IN THE THROAT OF A HORSE.



A HORSE WITH THE THROAT BLISTERED.

The action of the vesicatory having subsided, the natural food may be returned to, only with certain cautions. The hay must be shaken out to remove dust, and it should also be picked to take away any harsh substances, pieces of stick or thistle leaves. Then the fodder, being perfectly clean, should be sprinkled with water and allowed to remain soaking at least six hours prior to its being placed before the animal. The oats, likewise, should be twice sifted, and once examined thoroughly by the hand. Afterwards, warm water ought to be freely poured upon them, and the grain be permitted to soak six hours before being put into the manger.

The popular opinion declares sore throat to be always present during laryngitis. That notion springs from the horse always quidding, or rejecting the pellet it has masticated, while suffering under an attack of the last mentioned disease. The two disorders, however, are distinct; likewise the remedies for each are separate. The quidding, during laryngitis, springs from the act of deglutition, obliging the sore and inflamed larynx to rise and press the pellet against the roof of the fauces. That act occasions much pain;



A HORSE IN THE ACT OF QUIDDING.

hence the aversion to swallow solid substances. Sore throat is, however, by no means the necessary accompaniment of laryngitis. Neither are the bowels invariably confined during the disease. It has been known that the purgation existed in such energy as to require remedies. Consequently, no absolute plan of treatment can be laid down. However, depletion should be avoided to every extent which may be possible. The chronic form of the malady, consequent upon debility, is to be much dreaded. Effusion into the membrane, covering the rim of the larynx and its attendant roaring, is too frequently the result of that weakness which is produced by active measures. Among the lesser evils are cough, which not unfrequently proves but the precursor of more potent ills. Therefore, while laryngitis lasts, rather check the fever by gentle measures than resort to antimonials, nitre, or the host of lowering agents.

So soon as the case is observed, change the stable; the horse will do far better in the open air than in the foul atmosphere which originated and must aggravate the disorder. Rain, snow or frost, are more wholesome than the polluted warmth man's most humble slave is too often doomed to inhale. The roofs of many stables are terribly low; in no building of this kind is the covering too high. The welfare of the horse seems always sacrificed to the imaginary interests of its master. Thus, above the stable is built a loft for the hay and a residence for the groom. To save expense, the building is raised as small a distance from the ground as possible. The height of modern buildings would be by no means extravagant, were an entire stable of ordinary dimensions left free for a single quadruped to breathe in. A puerile parsimony, however, denies the huge lungs of the animal the only food life cannot do without, for even a short space. Disease and death, consequently, soon waste treble the money ample accommodation would not have consumed. Ignorance is the most expensive quality a proprietor of horse-flesh can indulge; for Nature invariably refuses to be made subject to man's convenience.

ROARING.

A horse is said to roar when, during progression, he emits any unnatural sound. The noise is not exactly of the same intensity

in any two animals. Some creatures roar so loud as to attract attention from the foot passengers; others have so trivial a defect in this particular that it can only be detected after a breathing gallop. In all, however, it materially lessens the value.

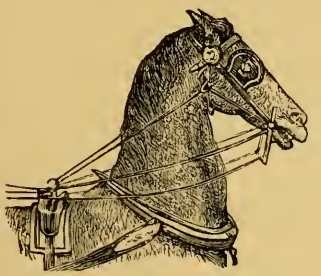
It is usual to cough horses suspected of being roarers; this, however, is wrong. The constant pinching of the larynx may induce the affection. The cough of a confirmed roarer, however, is peculiar. It consists of a double effort; a spasmodic expulsion of the air, followed by a deep and audible inspiration.

The best mode of detecting a roarer, where exercise is forbidden or impossible, is to get a stick and to quietly approach the suspected animal. Having reached the head, take a short hold of the halter, and all at once display the weapon, at the same time making a pretence as though about to use it violently upon the abdomen. The horse in alarm will run towards the manger, and, if a roarer, the action will be accompanied by an audible grunt. This proof, taken with the refusal to allow the horse to be tried, is generally conclusive; though by itself the test is by no means satisfactory. Many horses that are not roarers will sometimes grunt under the emotion of fear. The only satisfactory way of testing a roarer is to cause a horse suspected of it to be galloped or trotted, at whatever pace and for as long a distance as the veterinary examiner may dictate, during which examination the noise emitted during the respiratory efforts will soon give evidence to an expert of the existence or non-existence of roaring. An animal being the subject only of incipient roaring will often escape the notice of practical horsemen. It requires the knowledge and experience of highly qualified veterinary practitioners, when the disease in its early stage is detected by them, not so often when the animal passes them at full speed, as by listening to the respiratory sounds five minutes after such gallop, *i.e.*, when the efforts of expiration and inspiration are becoming tranquil, at which time the inspiratory murmur will by its sound give evidence of the soundness or unsoundness of the throat.

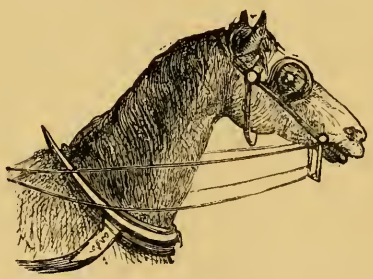
Of roaring there are two kinds, acute and chronic. Acute roaring is that which is merely symptomatic of a disease. It may be produced by the tumour of strangles compressing the larynx, or by any impediment, such as a polypus, etc., existing in

the air passages. In these cases remove the excitant, and the effect will immediately cease. Acute roaring is, therefore, a very trivial affair, excepting so far as it indicates the severity of the complaint, which generates the affection.

Chronic roaring is a very different business. This mostly results from the abuse to which a generous animal is subject, during the early period of its domestication. A carriage horse may be serviceable and even dashing when the twentieth year has passed, but the vast majority of these animals perish before maturity is reached. A handsome pair of Cleveland bays pull some fashionable lady round the park before their bones are formed or the teeth perfected. The animals have also to take their mistress the circle of morning calls, and to be smartly stopped short at the



A HORSE'S HEAD PULLED UP BY THE BEARING-REIN.



A HORSE'S HEAD WITHOUT THE BEARING-REIN.

door of every house she visits, while their sinews are still soft and yielding. They have to "go faster," when their mistress is in a hurry, and have to wait her pleasure when she is disposed to linger. They have to do all this, while their bodies are distorted by the bearing-rein; the balance of their frames being violently made to conform to the capricious notions of modern fashion. For the illustration of this subject, an animal, with a head rather well put on, has been chosen. The engraving represents a horse undergoing the torture of the bearing-rein. The next illustration exhibits the horse carrying its head as it would, were it free to exercise a choice. The reader is not asked which delineation looks the best. Any appeal to his taste is forborne, because the generality of eyes are perverted by the dictates of custom.

But he is asked to inspect the representations. Let him look well and long at them, then declare which appears most at ease. Let

his heart instruct his eyes, and, to its teaching, let him subject his liking; for there can be no beauty where constraint is perceptible. In the most vigorous of the ancient statuary repose may be absent, the muscles may be strained and the attitude violent; still all the parts balance. "Yes," it may be replied, "but in the Elgin marbles the horses' heads are thrown back." So they are, but not fixed back. The horses are ridden without bridles. The elevation of the head, therefore, denotes spirit, and represents no more than the action of a moment. The modern carriage-horse, whether galloping, trotting, or standing still, always has the head in one attitude, save when the muzzle is thrown into the air to ease, for an instant, the pained angles of the mouth, inhumanly tugged at by the bearing-rein.

Which of the foregoing engravings looks most at ease? Does not the fashionable horse appear suffering constraint and torture? The face is disguised and concealed by the harness, but enough is

THE HEALTHY LARYNX.

1. The thyro-hyoideus muscle.
2. The crico-thyroideus muscle.
3. The arytenoideus muscle.
4. The crico-arytenoideus posticus muscle.

a a. The thyroid bone.
A. The epiglottis (a cartilage).
B. The arytenoid cartilages.
C. The thyroid cartilage.
D. The cricoid cartilage.
E E E. The commencement of the trachea.

THE EFFECT PRODUCED BY THE BEARING-REIN.

a. The healthy arytenoideus muscle.
b. The healthy crico-arytenoideus posticus muscle.
A. The arytenoideus muscle paralysed and partially absorbed by the constant use of the bearing-rein.
B. The crico-arytenoideus posticus muscle rendered pallid, and deprived of power by the use of the bearing-rein.

left visible to suggest the agony compulsion inflicts. "Pride," says the proverb, "has no feeling." Therefore, no expectation is formed of any appeal to the fashionable circles; but by the ignorance of

the public is this barbarity licensed. Were the mass properly informed, the hooting of the populace would soon drive fashion into a more humane usage.

The left engraving represents the larynx in a state of health. The larynx is the most sensitive organ in the body. If a crumb of bread, a particle of salt, or a drop of water "go the wrong way," or enter the larynx, everybody has felt the convulsive coughing that immediately ensues. Yet this larynx, so exquisitely sensitive and so resentful of the lightest touch, is forced out of place and shape by the adoption of the bearing-rein. The whole weight of the head is made to press against the larynx; the action of the part is stopped; certain muscles are thrown out of use. Now, doom a part to constant rest, and paralysis soon results. This is exactly what follows the often long stoppage of that freedom which is necessary to the health of any structure. Certain of the muscles are absorbed; they lose their bulk and part with their colour; their function is destroyed: the consequence is, the horse becomes a confirmed and an incurable roarer.

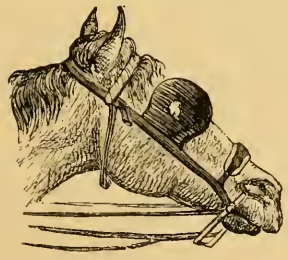
So fearful a result, as a life of anguish to any creature, might be thought sufficient to amend a triviality like the whim of fashion. Still, sad as that consequence is, it is not all which this folly engenders.

The larynx, sensitive and delicately constructed, is formed upon different pieces of cartilage. This substance is slowly organised and very yielding. The structures of the youthful horse's frame are not confirmed. All are soft, especially a substance naturally semi-elastic. The bearing-rein forces the head upon the neck; the larynx thereby is compressed. It assumes strange forms, when it is forced from its natural position. As maturity arrives, the various structures harden. Then distortion of the larynx becomes fixed. This organ has been taken from the bodies of old animals of the shape here depicted. The morbid specimen, from which the following was copied, is unfortunately too common. Many similar specimens could be obtained. What

THE TRACHEA AND LARYNX DISTORTED THROUGH THE CONSTANT USE OF THE BEARING-REIN.

a price is this to pay for fashion? To sit for hours behind a noble creature, whose exertions are adding to our pleasure, and at the same time to be entailing deformity upon the animal! Physical soundness is of far more importance to the horse than to the human being. The value of the quadruped, its manner of life, its kind of treatment, the sufficiency of its food, and the comparative comfort of its lodging,—all are regulated by the soundness of its body.

There are those who assert roaring is no injury to the powers of a horse. Certain animals, to be sure, can hunt and keep a good place, although thus afflicted; but "Nimrod" (as the well-known, late sporting writer called himself) soon found out to his cost that all roarers were not fit to ride across country. The writer has seen a sailor, deprived of one leg, dance a hornpipe with wonderful agility; but it would be folly, therefore, to say, sailors were not injured as dancers by the loss of a limb. That which impedes the free passage of air to the lungs must be a rather serious detriment to exertion. The cab proprietors of London, who cannot afford to purchase very sound animals, and then to let them out at so much per day to strange drivers, have discovered a way to prevent the noise generally made by roarers. This end is attained by placing a pad under a portion of the harness. In the following engraving pad is indicated by a white mark; though in reality it is so coloured as to blend with the coat of the horse. It presses upon the nostrils near to their openings, and by thus limiting the extent of their expansion, by controlling the space through which the air has to pass, it also commands the quantity of atmosphere which is inspired. Thus the bulk of air is regulated to the diminution of the respiratory organs. The horse breathes freer, and no noise is made during the act. Yet, although such a contrivance may do very well for a London cab, the pace of which is regulated by Act of Parliament, it evidently is unsuited to the field, where everything depends on the capacity of the lungs, and nothing upon the sound made during inspiration.



THE CABMAN'S REMEDY FOR ROARING.

Other causes are mentioned by different writers as provocatives of roaring, besides tight reining. Some of these, like thickening

of and ulceration of the membrane lining the larynx, are the after consequences of acute disease, and, as such, are to be prevented only by judicious treatment during the existence of the primary disorder. Among other causes, bands of coagulable lymph in the trachea and congenital deformity are too rare to deserve the attention they have received.

There is one consolation, however, connected with the subject which breeders may accept with confidence. Roaring is not necessarily hereditary. There is, moreover, a caution which, associated with roaring, may be given to purchasers. When trying a horse at the top of its speed never hold in the reins tightly. By so doing you draw the head upon the neck, compress the larynx, and may make almost any animal, however sound, "roar like a bull." Rather wait till the animal has stopped. Then dismount, place your ear against the windpipe, and, if the horse is a roarer, the deep inspirations, necessary to tranquillise the system, will inform you plainly enough of the fact. From the above it will be observed that roaring is the name given a sound which is emitted through the nostrils during the inspiration of air into the lungs, and that this sound is caused by an impediment which acts as a barrier to the ingress of air. Polypus, thickening of mucous membrane, constriction of the trachea, distortion of its rings or fusion of one with the other, all less or more diminish the area of the windpipe, make breathing more laborious, or may induce roaring. But the most common cause of this affection is the paralysis of the muscles on the left side of the larynx, which, with the loss of power, can no longer dilate the throat; the diameter becomes contracted upon itself, the tube grows constricted, and the notes sounded through it are altered in tone—it plays with violence the unfortunate note indicative of roaring. As before stated, roaring is a noise emitted from the horse during the effort of inspiration, which is produced owing to the existence of some obstruction in the air passages, either in the nostril, windpipe, or larynx; but the most usual cause of this affection is owing to the paralysis of the muscles on the left side of the throat. Man is afflicted similarly as the horse, but in man it sometimes occurs on both sides of the larynx, whereas in the horse it is confined to the one side only. Mr. Clarke, who has experimented largely upon this subject, considers that the most plausible theory for explaining

the reason why the left side of the throat is involved in this disease, exists in the fact that the left recurrent nerve, as it passes between the heart and the aorta, is likely to suffer from pressure when these structures are dilated or hypertrophied. Mr. Clark writes: "In several roarers that I have examined post mortem there has been marked hypertrophy of the heart and aorta. I have not observed enough cases to speak at all positively as to the proportion in which this condition is found, but it has been present more or less in all cases I have seen, and I think it must be common. Hypertrophy of the heart is also common in racers and hunters, and these horses often become roarers; and I think there may be some connection between hypertrophy of the heart produced by violent exertion in young horses and left abductor paralysis."

For years past it has been thought that the position of the left recurrent nerve and its relation to the aorta placed it in a position of likely pressure, should any enlargement of the heart or aneurism occur. Mr. Clark informs us that such pressure has existed, for in all the cases he has examined post mortem, "there has been marked hypertrophy of the heart and aorta."

It is well-known that pressure upon a nerve interferes with its action, and prevents it from conveying energy to the parts over which it presides. There is no dispute that the laryngeal nerve is at fault and that paralysis of the abductor muscle (crico-arytenoideus Posticus) leads to complete atrophy of it; and this is the common pathological state produced among roarers. The abductor muscles fail in operation or cease to act; the area of the larynx is diminished; the air cannot pass in or out of the lungs with that freedom which the healthy condition permitted; the diseased tube, being less in diameter than the normal one, allows the cartilages, etc., therein to form so many obstructions to the function of respiration—and roaring is the result.

Sometimes abductor paralysis involves the adductor muscles in the same disease, *i.e.*, the dilators and constrictors become equally involved in this affection. When such takes place it can easily be seen that a palsied throat is unable to perform those important functions which healthy respiration demands. Mobility of parts ceases, the passage of air will not stimulate to action parts over which the nervous force has lost all control, and laryngeal

obstruction becomes permanent. The derangement of the breathing power of roarers is due to inability of the paralysed muscles, the dilators on the left side of the throat, to open the left flap of the glottis, which is composed of a right and a left flap, and, like folding doors, open and shut as air passes to and from the lungs—each flap being formed by a cartilage and vocal cord.

External applications to the throats of roarers have met with no success. The introduction of electricity to the palsied muscles might exert a restorative effect in the incipient stage, but mechanical relief is alone of any service, and is obtained by removal of any obstacle which blocks the free passage of air through the respiratory organism, or by placing an artificial larynx in the trachea below the natural one involved in paralysis, which consists in tracheotomy—the advantages and disadvantages of which have been elsewhere fully considered. With roarers it will enable them to respire without making a noise, and no doubt assist them in breathing with comparative ease; but it has no influence for good or evil upon the palsied throat, and, consequently, extirpation of the offending obstacle seems the only mode of cure. But the operating on so delicate and complicated a structure as the throat necessitates not only great skill, but comprehensive knowledge of the parts involved in disease; and, fortunately, operations in this direction have been under the immediate care of two eminent surgeons, namely, Messrs. Horsley and Clark. The first case was a bad roarer. The larynx was opened "in the middle line between the vocal cords; the left cord was divided with a pair of scissors, close to the processus vocalis; the intra-arytenoid ligament severed, and the fleshy mass of mucous membrane enclosing the left cartilage of Santorini excised with the superior angle of the arytenoid cartilage; the actual cautery was applied to the mucous membrane at the outer and back parts of the arytenoid towards the crico-arytenoid joint so as to produce cicatricial contraction in that direction."

By the removal of any obstacle in the throat giving rise to the abnormal sound noticed in roarers, it would seem that by such means healthy respiration might be re-established. But wounds always have a tendency in reuniting their cut edges to thicken, and sometimes to so great an extent as to cause permanent enlargement of the parts operated upon; and this operation forms

no exception to the rule. But Mr. Clark thinks that, in order to avoid unnecessary injury to the mucous membrane, the obstacles in the larynx need not be removed, but can be dealt with by fixing back the offending parts, *i.e.*, by placing them in a position of normal abduction. But this experiment has not as yet been tried, and should it be, in the reviser's opinion it is not likely to prove any more successful than entire extirpation of the arytenoid cartilage, for the after thickening would be certain to supervene, and most likely of a permanent nature. The rationale of the operation is simple enough. Certain parts in the throat cease, from being paralysed, to act; their natural movements are no longer under the control of nervous force, and the doorway no longer sufficiently opens and shuts so as to accommodate the ingress and egress of air. It is therefore expected that, by taking down one of these doors, enlargement of the opening may be obtained, and easy breathing power reinstated. As long ago as the year 1858, Professor John Gamgee removed the arytenoid cartilage from the throat of a roarer, and this he effected by making an opening in the front of the larynx. The result of this operation was not satisfactory, and further attempts were not persisted in—as the professor thought that no good could ever be derived from this or similar operations.

In operating upon a horse for the removal of obstruction, it is necessary first to place the animal under the influence of chloroform, and to throw it in such a manner as to rest upon its back. The head should then be slightly raised and extended, and the throat exposed to enable the operator to select the exact spots where to begin and terminate this incision. The skin and the subscapulo-hyoideal muscles having been divided along the median line of the throat, the knife must be inserted into the crico-thyroid ligament and the incision extended as far as the first three tracheal cartilages, when the division of the cricoid ligament can be completed as far as the pomam Adami, the tampon-canulæ provided with an india-rubber sac (which is inflated with air so as to prevent the blood from escaping on to the lungs), when the operation for the removal of the obstruction can be proceeded with. Professor Axe, who has had extensive experience in the modes of operating, thus explains his *modus operandi*:—

"The wounds, both superficial and deep, are to be forcibly drawn

apart by spreaders, when an opportunity is afforded for inspecting the vocal ligament, in order to determine whether the roaring is the result of left recurrent paralysis or some other laryngeal cause. In the one case the vocal ligament of the affected side will remain unmoved during the ingress and egress of air, whilst the other "will move freely with each inspiratory and expiratory effort."

"Should the mobility of the left ligament be restricted, and its movement tardy, the operation may be proceeded with.

"Here the index finger of the left hand is inserted into the left ventricle, and the vocal ligament drawn towards the centre of the larynx.

"While thus stretched, an incision is made across its thyroid attachment, taking care not to cut through the posterior constrictor muscle which lies immediately beneath it. By means of a pair of Vulsellum forceps the divided ligament is seized and a little traction made upon it, while with the rectangular knife the mucous membrane is divided along its posterior border, and the section then continued downward on the edge of the arytenoid cartilage, as far as the posterior or articular angle. The posterior constrictor is now dissected away from the arytenoid, and the cartilage pulled gently upward with the Vulsellum forceps, and by means of the lancet-pointed scalpel disarticulated from the thyroid.

"In performing this part of the operation a careful light pricking movement is made over the joint with the point of the knife until the capsular membrane is punctured. The knife is then carried round the articular border, with the cutting-edge directed towards the joint surface of the arytenoid. By adopting this mode of procedure the danger of damaging the thyroid is much diminished, and the untoward results of cartilaginous new growth materially obviated.

"Having accomplished this, which by the way needs a little practice, the posterior angle of the arytenoid is altogether freed from the cricoid by dividing the two abductor muscles (crico-arytenoideus posticus and lateralis) at their point of insertion. This is done by passing the probe-pointed bistoury across the articulation, and describing a crescentic movement backward round the muscular tubercle of the arytenoid cartilage.

"This done, the dissection is now carried on in a forward

direction — separating the anterior constrictor and dividing the arytæno-epiglottidean fold. The latter section should be made close to the cartilage of Santorini, in order to save the mucous membrane as far as possible.

"It only now remains to divide the inter-arytænoid ligament to free the cartilage from its fellow, and this is done by means of curved or rectangular scissors.

"Altogether the actual operation occupies about ten minutes, and it need hardly be said that it is greatly expedited and facilitated by the employment of an electric lamp. This is connected with a neat portable battery, and supplies an excellent light. It was supplied by Messrs. Maw & Co. The instruments used in the operation were specially made for me by Messrs. Arnold, and they now supply a battery similar to the one referred to above.

"In some instances the hæmorrhage is considerable, and on all occasions free sponging of the interior of the larynx is necessary during the dissection, and one or two small vessels may require to be twisted.

"Should the horse rally from the effects of chloroform before the operation is completed, as may happen, it must be borne in mind that the readministration of the anæsthetic cannot be effected through the nostrils, but must be carried on through the canula which is now the respiratory outlet.

"At the close of the operation the head should be slightly raised in order that the blood-clot lodged in the fauces and pharynx may escape from the surgical wound, and after the organ has been freely sponged the dissected surface should be carefully scanned, and any loose shreds of mucous membrane carefully removed. The larynx is now well sprayed with antiseptic solution, and the animal is allowed to rise.

"*After-Treatment.*—Twenty-four hours after the operation the tampon-canula is removed. It is my practice to allow the patient food and water, as usual, from the time when the operation is completed. No difficulty appears to be experienced in swallowing solids, but a certain quantity of fluid will now and again pass into the trachea and produce slight paroxysms of coughing, should water be given with the head in an elevated position. When taken from the ground small quantities will

flow down the nostrils, but I have not experienced any ill effects from either of these derangements. To guard against food being washed either into the one channel or the other, watering the animal before feeding is strictly observed. In cases where marked difficulty of swallowing water occurs it is good practice to feed largely on carrots for a time, so as to render its use well nigh unnecessary.

"Three or four times each day antiseptic spray is thrown into the larynx, and the external wound is kept scrupulously clean. For the first two or three days a copious flow of mucus is discharged from the orifice in the throat, and later on muco-pus in increasing amount.

"About the sixth or seventh day the horse should be cast and the interior of the larynx inspected by means of the electric light, and this should be repeated again a few days later. Where exuberance of granulation is found to exist the part must be cauterized and inspected again if deemed necessary.

"After the first week, walking exercise for half-an-hour each day may be allowed, and the period increased as time passes on.

"In from four to six weeks the wound is completely healed, and a little trotting exercise may now be enforced.

"It may be pointed out that it is not desirable to submit the horse to severe exertion at this time for the purpose of testing his wind.

"At least ten weeks should be allowed to transpire from the date of the operation before such a step is taken.

"This period has not yet been reached by any of the cases upon which I have operated, but I am pleased to say that such trials as some of them have undergone fill me with hope of great success." —*Professor Axe on Laryngeal Tracheotomy.*

During the time Drs. Horsley and Clark were experimenting on roarers' throats, Dr. Fleming, chief veterinary surgeon of the army, was similarly engaged in operating upon diseased horses. Fleming's operation differs little from that of Clark, in that both seek to remove the obstacles, namely, the left arytenoid cartilage and vocal cord. With both, the results from the operation have not been rewarded with success, although, according to the reports published in the *Veterinary Journal* for 1889 and 1890 and the *Annual Reports of the Annual Veterinary Department*,

some few cases have been cured, and relief has been afforded in many. But the operation has failed to effect any good among the vast proportion of those animals that have been subjected to the surgeon's knife. Operations for the relief of roarers are still being conducted, and from remarks previously made it will be seen that good results may be anticipated by fixing back the offending parts, so as to keep the doorway of the throat permanently open for the easy ingress and egress of air. If this mode of dealing with the palsied larynx should ever meet with success, then a great boon for horse-flesh has been gained. But this we very much doubt, although it is well known that in every operation good results cannot of a certainty be predicted; and, in the one under consideration, difficulties, not only in regard to the mode of operating but in the results which supervene, make it manifest that the surgeon has more to contend with than usual. For, in the first place, a throat in a partial state of paralysis has to be encountered, which seems to be incapable of being restored to a healthy condition—at any rate, it has as yet defied the physician's skill; consequently, as a last resource, the larynx has been operated on, and could the obstacles therein be removed and the clearance of the impediments to the free passage of air be thereby insured, then a remedy for roaring would have been discovered, but this desired end has not yet been attained. Experiments have proved that mucous membrane cannot with impunity be removed, and that the rings of the trachea, immediately after being cut through, collapse upon one another; their edges do not meet, but in uniting overlap, and thickening occurs, and when the healing process has been perfected the windpipe is found to be decreased in diameter, caused both by the thickening and the abnormal condition of the trachea; and in operating upon the throat directly, that is, by cutting into the larynx without interfering to such an extent with the windpipe as above indicated, even then the baneful results of the operation are constantly met with. The healing process is effected by causing thickening which, like the removed arytenoid cartilage and vocal cord, represents a similar obstacle to the performance of easy respiration. Such conditions often trouble the skill of the operator, but in most cases such can be controlled. In dealing with the throat a most sensitive and delicate structure has to be encountered, and the removal of mucous membrane is sure to set up inflammation,

sometimes of a dangerous nature, when the curative process is sure to be effected by extra growth, *i.e.*, by enlargement; and the same results are to be anticipated after the extirpation of cartilage or any other laryngeal organism: consequently, the consideration of the subject is not so encouraging as to make us believe an operation has been discovered for curing this affection. Dr. Fleming states that last year he succeeded in curing eight cases of roaring, and relieved eighty,—that is, their breathing powers were greater after operation,—and that they subsequently made little noise during respiration, but failed in more than 100 cases. Reports from all other sources, however, give us little encouragement. Professors Brown and Axe have ceased to anticipate any favourable results, and certainly, until the mode of operation can be varied, no permanent cure for roaring is likely to be obtained. Dr. Fleming, however, is sanguine, and intends to prosecute his researches further, as he considers that, knowing the obstacles which interfere with the respiration of roarers, we can remove them, and it only awaits more expert investigation to guide the knife in such a manner so as to make as small an opening as possible through the front of the larynx, and thus avoid extensive lacerations by cutting away as little mucous membrane, and only extirpating or fixing back the actual impediments. May success attend the brave! Difficulties in way of success are not dependent on the operation, which is simple enough to a good surgeon, but in the results of it; and it is not easy to understand how the arytenoid cartilage, etc., can be exposed without injuriously lacerating the tissues in vicinity of the larynx, when such extensive surgical interference must, of necessity, cause congestion of the parts which nature, in effecting cure, involves in thickening, thus setting up a permanent barrier to the function of respiration.

The experiments upon roaring horses have established the cause of the disease, namely, pressure on the left recurrent nerve caused by hypertrophy of the heart and aorta, and, in every case examined by Clark, this pathological state was manifest. The question now comes, What gave rise to this cardiac hypertrophy? No doubt, violent and oft repeated physical exertion! Injuries to the heart and blood-vessels are by no means uncommon to athletes, especially to sprint runners, who violently exert themselves from start to finish. When the blood is driven with too great force

through the arteries and veins some portion or portions of the cardiac tissues within the chest give way, lacerations occur, and cure is effected by hypertrophy. With man the effect of severe strain has long been recognised, but in the horse it was left for Clark to discover the cause of roaring, namely, the pressure on the left recurrent nerve obtained by thickening of the walls of the heart and coats of the aorta, in both man and the horse cardiac hypertrophy, etc., is caused by too severe physical exertion. Clark finds that race-horses and hunters are more prone to this malady than any other section of the equine tribe; and this is accounted for by the fact that they have so constantly to gallop at top speed either on the downs or in the hunting-field, when the circulatory system is exposed to the ill effects induced by too excessive exercise, which, being oft repeated, ultimately terminates in chronic disease, or, in other words, hypertrophy of the heart or its blood-vessels. Early racing and overtaxing young horses leads to more disasters than one. That of roaring, as a rule, puts a stopper upon the future career of a promising young race-horse; and a hunter, when affected, is unable to perform any longer with comfort to himself or his rider. "Prevention is better than cure;" and roaring might, certainly as regards young race-horses, be reduced to a minimum. The system of running two-year-olds has been inveighed against for years past, and the greediness of gain and the gambling table added, perpetuates its continuance; the injuries inflicted upon immature animals being considered manly! No sympathy is ever manifested for the numerous colts that break down, and, after being ruined for life, are banished from the turf to the cab rank. It certainly is strange that the great race of the world is run for by not fully developed animals, and it is not generally known how great a number of the entries for this race are injured, by their preparation, to so great an extent as to incapacitate them for ever again competing at race meetings; yet, although this fact is established, men still, for the sake of sport, indulge in acts of cruelty. Roaring, as Clark states, is due to hypertrophy of the heart or aorta, and this pathological state is produced by severe physical strain, and is more likely to afflict young than old horses, for the simple reason that the tissues of youth are unformed, and not sufficiently developed to withstand with impunity the constant strain imposed upon them at training quarters. Machinery weak,

in any point unfinished, cannot work with safety, neither can a not fully developed horse race without coming to disaster. The harp of a thousand chords gives way somewhere, rupture of blood-vessels, and injury to walls of the heart not only occurs, but these mishaps lead to hypertrophy, which, pressing upon a nerve, produces paralysis of the horse's throat, or in other words "roaring." It is not our intention in these pages to expose the evils attendant upon early racing, although, certain it is that if horses were allowed to mature before they were severely trained, many valuable animals would be preserved from disease, injury and death, which now drag out a miserable existence, or prematurely die from the effects of injuries resulting from too early training. Our American brothers train their horses in a much more humane manner than we do. They begin little by little, and from year to year gradually increase the speed until the sixth or seventh year, when they try to make the fully matured horse attempt to break records. Mainbrino Sparkle, the property of the well-known American trainer of trotters, John Splan, was an example of what kind and judicious treatment will effect. This mare, now seven years old, is sound in wind and limb, and had she returned to America would have astonished the world with her performances; and this perfection of form has been obtained by never exacting too much at a time. As Splan told the reviser, we begin to train young, but then it is merely play; we never let a three-year-old trot his mile in anything like good time, and we never take liberties with trotters until they are fully matured; and pace is always got out of horses by kindness. No good horse wants whip or spur, he only wants to know what you wish him to do, and he will do it. "I shall never forget," said Splan, "when Maud S. broke record. She knew what she had to do, and when she came to the last lap, she would not be interfered with; she went like an arrow from a bow. If she had been going for a man's life she could not have gone better. The truth is, I love horses. I never strike them; always talk to them with kind words; they always respond with their ears, the movements of which indicate to me how fully they appreciate my remarks. I am afraid to strike a horse; in fact, a trotter never wants it. He is always trying to do too much, and he should be as much kept back by the voice as with the bit. At a close finish, one shout of encouragement will make him win." England should

read John Splan's *Life with the Trotters*, and learn a lesson upon training from America. It will prompt Englishmen to show "more mercy to their young horses," and teach horsemen to recognise how seldom roaring is of a hereditary nature, and how constantly it is one of the evil results of excessive work, caused by too early training.

CHOKING.

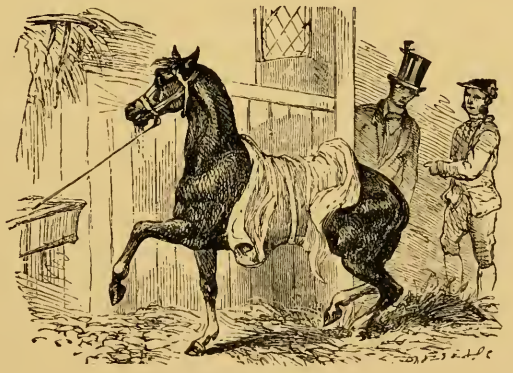
Gentlemen should look after their horses' welfare as much as their own, and, in so doing, grooms and too knowing persons must never be allowed to administer drugs. It has caused more disaster than most horsemen are aware.

The men who congregate about a mews are constantly longing for something which shall magically do their work for them. They have a firm belief in charms and an utter hatred of labour. They sigh for some spell which shall marvellously improve the appearance of their master's property without exertion on their parts. Their pride centres in the blooming coats of their charges. They have a large confidence in all sorts of "condition balls." Such secrets constitute the mystery of their craft. As a general rule, the faith is proportioned to the strength of the ingredient. Arsenic is, by the lower order of stable-keepers, contemplated with positive love. Vitriol, in the uneducated groom, engenders the warmth of passion. Nitre breeds delight; and confidence is, by the better sort of horse attendants, bestowed on any filth or trash. Raw tobacco has some repute, but the ashes of the weed, collected and wrapped in several papers, are much more esteemed in the generality of stables. Half-a-pint of human urine, forced down the cleanly throat of the horse, is not an unfrequent benefit bestowed upon the animal; but, happily, this specific is recognised only by the more learned of the class. Of all things, however, to amend condition, perhaps a raw egg driven into the horse's œsophagus, before any food has been consumed, may be honoured by the most universal regard.

Nevertheless, be the condition-worker what it may, the groom generally keeps his own counsel. Arsenic and vitriol are commonly favourites with agricultural carters, who poison their horses with the intention of over-much kindness. Tobacco ashes and eggs are popular with the more refined of the order. Both classes, however,

are too self-confident and too ignorant to have any fear of consequences. The groom thrusts an egg into the horse's gullet. Its size excites the contractibility of the muscular fibre; the substance is soon grasped by the living tube with spasmodic tenacity. There it is retained. The symptoms consequent upon choking are soon exhibited, but the groom looks on unmoved. At first, he thinks the evidence of agony is proof in favour of his charm; subsequently, he resolves, with the cunning of ignorance, "not to split upon hisself."

Now, in a case of this description, never depend upon any report you may have received. Recollect choking may spring from two opposite causes. The symptoms may result from disease, as strangles; or they may arise from any tumour pressing against the respiratory channel. In that instance, however, remove the cause, and the effect will cease. Of genuine choking, during health, there remain two sorts—the high and the low choke. Thus, if the substance has become fixed in the pharynx, or has only passed six inches down the œsophagus, the symptoms are urgent. The remedy must be at hand, else the life is quickly lost.



THE HIGH CHOKE.

In the high choke the head is raised; saliva bedews the lips; a discharge soils the nostrils; the eyes are inflamed and watery; the countenance is haggard; the breathing audible; the muscles of the neck are tetanic; the flanks heave; the body is in constant motion; the fore legs paw and stamp; the hind legs crouch and dance; perspiration breaks forth; every movement expresses

agony: wherefore, if relief be not quickly afforded, the horse falls and dies of suffocation.

Sometimes tracheotomy must be resorted to previously to attempting the necessary means for the removal of the obstruction in the gullet. In order to unchoke a horse, first fix a balling-iron in the mouth, and pass the hand to the region of the pharynx. Sometimes the impacted substance can be felt, but cannot be

AN EXTEMPORISED HOOK TO RELIEVE HIGH CHOKING

grasped. In this last case, a rough hook is to be extemporised out of any wire which may be at hand. It should be of the shape indicated in the preceding engraving, and of sufficient length to reach behind the obstruction. The hook is to be gently worked into its situation, and, with a sudden jerk, the foreign body is to be removed from the œsophagus.

Occasionally, the substance is so firmly embraced as not to permit any instrument to pass beside it. Sulphuric ether must then be inhaled, in the hope of thus overcoming the spasm. The ether, however, does not in every instance prove successful; and, as an egg, probably, alone could be of sufficient size to resist all the measures adopted for its removal, a large darning-needle must then be procured. That, being first armed with a piece of strong twine, must be driven through the skin, and made to enter the globular impactment. There is no danger of injuring nerves or arteries while doing this; all vessels are pushed on one side by the enlargement caused by the choking substance. The integrity of the shell being destroyed, the egg may easily be broken by external pressure. Another plan proposed is to insert a fine trochar, and draw off the contents of the egg. Either method would answer, but it is always well to wound the lining membrane of the œsophagus as little as may be possible.

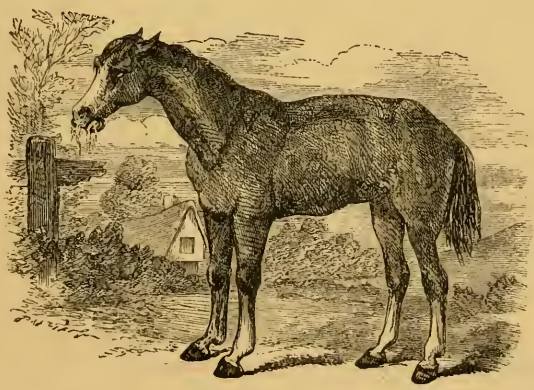
The employment of the cow probang has been advocated, the egg being to be broken, if this recommendation is adopted, by the employment of the whalebone stilet. The œsophagus of the cow

and horse, however, are of such different construction that he must be a very bold or a very ignorant person who dare employ an instrument made for the first to remove an obstruction within the gullet of the last.

THE COW PROBANG, USED TO BREAK AN EGG.

An old and hardened ball may provoke this accident, but then the impactment is not complete, because such substances are seldom of a perfect round. The sides are angular, and the obstruction is, therefore, more easily removed. Horses are not, like the bovine race, so greedy as to swallow potatoes or small turnips without mastication. Besides, man's favourite is more under domestication, and therefore less exposed to such accidents.

When the choking occurs low down, or within the thoracic



THE LOW CHOKE.

portion of the œsophagus, the symptoms are less urgent. The animal ceases to feed. If water is attempted to be swallowed, it returns by the nostrils. The countenance expresses anguish, but the head is not held erect, neither are the muscles of the neck spasmodically contracted. Saliva flows from the mouth, and a copious discharge runs from the nose. The breathing is

laboured, but it is seldom noisy. The back is roached, the flanks tucked up, and the horse often stands as if desirous of elevating the quarters.

After two or three days (for the low choke may continue such a period), the accumulation of wind within the abdomen becomes excessive; the breathing quickens; the pulse fails, and the animal (if not relieved) perishes from suffocation, induced by tympanitis.

For low choke, more time than nature allows, when the impediment is situated near to the mouth, may be occupied. No hurry nor any speedy remedy is required. Give oil by the quarter of a pint every hour. In the intermediate half-hours give strong antispasmodics, using the horse probang after every dose of the latter. Sulphuric ether, two ounces; laudanum, two ounces; water, half-a-pint, will constitute the proper drench. Should the whole be returned, chloroform must be administered by inhalation till total insensibility results. Then, the head being extended, the probang should be introduced, and gentle but steady pressure made to force the obstruction onward. If success comes early, it is easily welcomed; but it is well not to expect success before the expiration of twenty minutes. When movement is felt, do not increase the force. Maintain a steady pressure, never relaxing and never augmenting the power exerted. Drive the substance slowly before you, but do not, by sudden energy, risk either the provocation of spasmodic action or a rupture of the œsophagus.

Before using the probang, always calculate the length of the whalebone, so as to judge when the end has nearly entered the stomach. It is always well, if possible, to avoid forcing the end of the probang through the cardiac opening, as the termination of the œsophagus is called. The muscular fibres here are strongly developed, and are formed to resist the passage of any substance out of the stomach. To be sure, the animal is under the influence of chloroform; but that powerful agent seems more particularly to exert its action upon the voluntary muscles, whereas the cardiac orifice is guarded by white involuntary muscular fibre.

A few days subsequent to the removal of the obstruction, no matter where it may have been situated, feed on soft boiled food,

not bran mashes; and, in case of roots not being at hand, sustain the life with smoothly-made gruel. Let the animal be observed when watered. Should the liquid be returned by the nostrils, injury to the lining membrane of the œsophagus is indicated; stricture may then be anticipated. Though it be not probable that any medicine will now be beneficial, nevertheless, as an experiment, administer, thrice daily, four ounces of water in which four grains of chloride of zinc have been dissolved.

Such is a true and brief history of the terrible mishaps that result from the mingled knowingness and ignorance which characterise the majority of grooms. A good or simple lad would be sadly out of place in a modern stable, though the writer should recommend the employment of such to become more general. The tricks and arts of professed grooms are all worthless or injurious. To such men, however, is the timid horse entrusted; and so much are our minds enslaved by custom, that the hint only of employing women in the stable will no doubt be received with general indignation. Let us, however, endeavour to view the matter without prejudice. Women work in the fields; women fill the situations of men as domestic servants; women carry heavy loads; women on the continent perform the duties of men; women commonly tend an animal of inferior intelligence, the cow; women are subordinate to men only where strength is concerned. In the stable no strength is required. Courage even is out of place there. Gentleness is the only quality imperative, and gentleness so habitual that it never will alarm timidity. This attribute seems to reside in the feminine mind; and, however opposed it may be to custom, the author cannot but lament the barrier which prevents the horse from becoming known to its natural attendant.

There is no doubt that women might occupy more positions in everyday life than they do. Their temperaments of patience and longsuffering well fit them for the position of nurses in the sick chambers of man; and their supervision of stables would no doubt cause such places to be kept in a more sanitary condition. Their gentle influence, too, might have an effect in causing men to be more careful and affectionate to the horses under their care, whilst harsh words and badly-sounding sentences would not be indulged in so much in the presence of women. But the hard work, sometimes necessary to the stable, would be too exacting for them, and their

style of dress ill adapted for a groom. Women, however, of the higher class might supervise the stable economy. They even do so now, and the reviser knows of an equine establishment now where a lady manages her stud with an earnestness that ensures perfection in every detail.

RUPTURE AND STRICTURE OF THE ŒSOPHAGUS.

The gullet or œsophagus of the horse is, perhaps, the most compact and delicate structure in a beautiful body. Its mucous lining membrane is thrown into minute folds, thereby announcing to the studious anatomist the degree of extension the tube was designed to endure. Its exterior is enveloped by a large mass of cellular tissue, by which means the independence of its motion is secured; it will permit of less violence than almost any other part. Small as its channel and delicate as its lining membrane are, the tube is amply large and strong enough for a creature which masticates long before it deglutates once, and which is by nature forbidden to regurgitate.

However, stablemen seek not to understand but love to master the quadruped entrusted to their charge. The butt-end of a carter's whip is a favourite resort with these people, whether serving some farmer or acting as grooms to some lord. When any mighty specific happens to stick in its passage to the stomach, the butt-end of the whip is employed to drive the obstinate charm onward. Should the obstruction be situated low down, the whip is neither small enough nor pliable enough to touch the offending matter. Should the choking mass be lodged high up, by compelling it beyond the reach of human hand, positive injury is done, and ultimate relief is rendered very problematical indeed. However, ignorance is not often to be deterred by difficulties. As the passage narrows, greater violence is resorted to; the men push and strive till at last the whip moves onward, and the stablemen congratulate each other upon "all being right at last."

When the whip seemed to yield, something more than the obstruction gave way—the walls of the canal were ruptured: an almost inevitable death then awaits the unfortunate animal. The food is rejected; drink is refused; the creature stands motionless, the picture of horror; it seems to comprehend and to await its

approaching fate. The neck begins to swell; the swelling creeps on till it invests the entire body. Gas has found entrance into the cellular tissue through the divided gullet. Death at last ensues, because the inflation impedes the vital functions, and, being corruptive, is incompatible with the preservation of living organism.

More often, however, the whip only tears the internal membrane; the obstruction has been dislodged and removed, but a worse evil has been created. The horse for a time refuses food, and the anxious master wonders "what can be the matter!" At last the pain may cease, the appetite return—for nature may strive to repair the damage. The whip usually tears a flap of membrane, which, obedient to the laws of gravity, hangs pendant within the œsophagus. Our common parent, however, does not, after the human pattern, repair the evil which man induces. She has no mortal hand wherewith to restore the rent membrane to its place. The sides of the wound, however, strive to unite, and by the date when this junction is accomplished the mucous membrane, being inelastic, the magnitude of the canal is seriously diminished. Nature seems to feel that the chief strain of deglutition will be upon this lessened spot, which therefore she endeavours to support and strengthen. Lymph is deposited about the place, till ultimately a firm and solid stricture is formed.

The dilated œsophagus or sac superior to the stricture.

The Stricture.

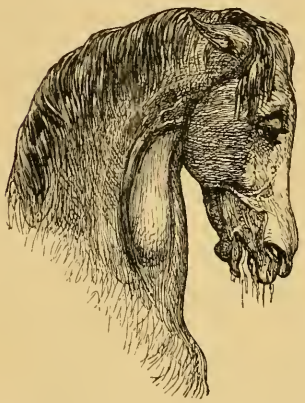
The tube of its natural size.

STRICTURE OF THE ŒSOPHAGUS.

This, however, though bad enough is not the worst. Lymph after a time has a tendency to contract. With the diminution of the external ring, of course the internal canal decreases. It is strained at every meal, but straining only provokes its contractive power, till at length hardly the best comminuted morsel could pass the opening. Such, however, rarely enters the strictured œsophagus; the difficulty of deglutition renders it impossible for the appetite to be appeased. No sooner is the food placed before the animal than, because of hunger induced by long starvation, it is bolted almost unprepared by mastication and insalivation. Nourishment in that state cannot pass the stricture; it lodges

above the contraction; still hunger impels the horse to eat on. It does so till the œsophagus becomes distended. Gullets have been taken from animals, stretched till they are thinner than the paper upon which this book is printed, and so much enlarged as to admit a boy's clenched fist.

After the affection reaches this stage, the swollen œsophagus, when loaded, presses upon the trachea and larynx so severely as materially to impede the breathing, and it is at this period that instinct develops a strange artifice. The horse has no power to vomit, the fibres of the healthy œsophagus impel but in one direction; still, no sooner has the gullet become distended than the impaired breathing creates a desire to remove the obstruction. The chin is lowered; the crest is thus curved to the utmost, when the muscles of the neck are brought into violent action, and the impacted provender is shot back through the mouth and nostrils.



THE HORSE ENDEAVOURING TO CAST UP THE PROVENDER WITH WHICH THE SAC OF A STRICTURED ŒSOPHAGUS IS LOADED.

This description reads bad enough, but regard for veracity obliges the statement that it is not yet complete. Hunger when excessive causes the stomach to pour forth its acid secretion. This effect is produced by the sight of provender; but the gastric juice not being given food to act upon, passes into the intestines. There it provokes the most intense spasm, so that it is common to see the hind legs raised to violently strike the aching belly, while the laboured breathing announces that abstinence from any kind of exertion has become a primary necessity of life.

The only palliative for so pitiable a condition is carefully prepared food—gruel and such substance given in small quantities at a time. The horse, however, when it requires such support, generally has been so much lowered by disease as not to be worth its ordinary keep, when humanity suggests that the sufferer should be destroyed.

Before quitting this subject, a caution must be given against all probangs as at present made. The cow probang is evidently unsuited to the equine gullet. The horse instrument has the bell of

the cow probang attached to a piece of whalebone. When a narrow channel is to be entered, the bulk of the leading substance is of all importance. That which goes in front, not that which lies behind, has then to be considered; so, in spite of the whalebone, the present horse probang is nothing more than the cow instrument in disguise.

The probang intended for the horse should be formed like that employed upon the human subject. It should consist of a long

The horse probang as at present made.

That which should be employed.

THE HORSE PROBANG, AS IT IS AND AS IT OUGHT TO BE.

slip of fine whalebone, having a sponge fixed to one end; when required, the sponge should be thoroughly saturated in water or in oil (according to the circumstances), then squeezed dry and forced down the œsophagus. The material would adapt itself to every cavity, would fill the largest, but could not harm the smallest; would as effectually remove every obstruction, but would not be so difficult to retract, if the head should by accident pass the cardiac orifice.

BRONCHOCELE.

This disease, which entails much suffering upon the human species, under the name of "goitre," is, in the horse, a very trivial affair. The cause of its origin has not yet been made plain. It is, however, a sign that nature suffers in some essential particular. In the sunless depths of the valleys about the Alps it is, with man, a frightful deformity. May not the dark and close stables, in which horses too often are confined, have something to do with its production in these animals?

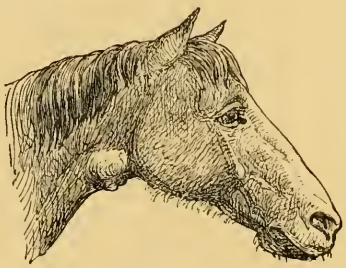
It is an enlargement of a substance, anatomically called the thyroid gland. This body resides upon the larynx, immediately under the jaw. It is occasionally as large as a hen's egg, but seldom is of greater magnitude. Its natural size is that of half a chestnut. The enlargement appears to occasion no inconvenience, and is only objected to because horsemen consider it unsightly.

Purchasers, moreover, are fastidious about buying an animal which exhibits any unusual development.

It, however, generally yields to treatment, and the animal need not be taken from gentle work during the time occupied by the cure. Let the following drink be given night and morning:—

Iodide of potassium	Half-a-drachm.
Liquor potassæ	One drachm.
Distilled water	Half-a-pint.

At the periods stated for giving the medicine, rub into the enlargement a portion of the annexed ointment. Remember, any of the unguent being left upon the hair is proof positive that sufficient friction has not been employed. The ointment can in no way



A HORSE WITH BRONCHOCELE.

benefit the external covering. The object of friction is to get the ointment absorbed. This it effects by promoting warmth, and thereby inducing dryness, both of which stimulate the pores of the skin to take up outward moisture.

When this is being accomplished, there is no necessity for extraordinary care or excessive attention. The tumour, which constitutes bronchocele, is certainly not endowed with morbid sensibility. Sufficient force for the purpose in view, therefore, may be safely exerted; but, at the same time, it is always well, where horses are concerned, to discard anything approaching to violence. Consequently, exercise a proper discretion when employing the following ointment:—

Iodide of lead	One drachm.
Simple cerate	One ounce.

Supposing the tumour to be present only upon one side, a piece of the ointment as large as a hazel nut will be sufficient, if well rubbed in each time. Twice the quantity will be necessary when the swelling is to be seen upon both sides of the neck: and should the part become sore, of course all application must be stopped for the time necessarily occupied by the healing process.

CHAPTER VI.

THE CHEST AND ITS CONTENTS—THEIR ACCIDENTS AND THEIR DISEASES.

CONGESTION IN THE FIELD.

It is a dangerous thing to trust a dumb animal to the guidance of an ignorant man. Such a person is dangerous because he does not understand that certain preparation adapts vitality to particular

A HORSE PROSTRATE FROM BEING OVERRIDDEN.

usages. A racer may be a mysterious creature, about which he dares to think nothing, excepting that it is a horse, very beautiful and very fleet; a hunter, in his notion, is any horse running after hounds; he takes the stable favourite out for a morning canter, crosses the hunt, and immediately, with no thought of harm, joins the field. For the first few acres a very ungentlemanly person

may, in a very gruff voice, request him to "hold hard and not to ride over the dogs;" but the first three fields passed, there is no need of such a caution. The horse, with that perfect abandonment of self which makes its will its master's choice and converts the rider's pleasure into its delight, strains every nerve; its head is protruded and its legs outstretched; it struggles hard, but can make no way. Voice, whip and spur by turns urge the animal onward, but it has been taken suddenly from its uses; the horse thinks not of that, it only seeks to gratify the being who for a time has become its ruler. To his amusement it devotes itself, and obedient to this idea it runs, or endeavours to run, till its limbs are with difficulty lifted from the ground; it reels, it falls, and the would-be huntsman stands over a prostrate steed.

The horse has congestion of the lungs. Yes; but what caused it? Over-exertion, causing devitalization of nervous force, and consequent congestion, thus preventing the lungs from absorbing a sufficient amount of air for the oxygenation of the blood. Deficient oxygen causes the frame, spite of violent exertion, to feel clammy cold. The brain being supplied with impure blood, produces temporary insensibility. Vitality seems to be contesting with death.

The animal after some time somewhat recovers, and with difficulty is led to shelter. Do not be led astray by that worse than ignorance which advises you to administer gin and pepper, strong ale or brandy. You can do no good, excepting rubbing carefully the limbs and body, so as to tranquillise the circulation. Send at once to the nearest chemist for a few drachms of carbonate of ammonia, and administer as quickly as possible in a pint of gruel two drachms of it, and repeat the dose every hour until the assistance of a veterinary surgeon can be obtained.

Firmly as nature may have united man and horse, gentility would dissever them; it is not polite in society to speak of man's most patient companion and most faithful slave. Gentility condescends to use animals, but loves to prate only of frivolity. The education of the young, which should be directed by the conversation of the matured, is thus neglected. Boys, London boys especially, regard the stable as a place to be avoided; they view horses, not as the gentlest of created beings, but as creatures it were a breach of good manners to speak of "before ladies." They learn to consider these animals and all that concerns them as subjects to be forgotten the

instant "*society* is entered." From the ignorance thus fostered, and from the fashion which prefers to talk about trifles to conversing of those matters which constitute the facts of reality and involve the instruction of the youthful, springs that mishap which has been described as congestion of the lungs.

A noble animal is thus, by prejudice, denied the benefit which would otherwise result from social opinion. Woman, whose gentleness fits her for the companionship of the timid horse, is, as by design, kept in perfect ignorance of her lawful possession. The creature is separated even from those benefits which would result from the expression of feminine sentiment. A being that seeks protection, that with a submission amounting to a perfect denial of self, entreats for shelter and begs to serve, is handed over to the harshest order of the human race. Much more than this, it is transferred to the custody of the ignorant, who view its nature as requiring to be subdued, and think they display spirit when they treat the most fearful of living creatures as though it were a carnivorous brute bent upon ravening and destroying.

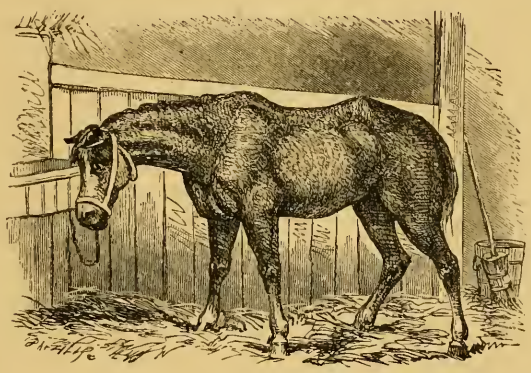
When a horse sinks in the field, clothe him as warmly as possible, and lead him gently to the nearest stable. There heap hot rugs upon the body; the desire is to relieve the lungs by determining the blood to the surface; bandage the legs and cover the neck, warm the stable either with fire or by means of tubs full of boiling water. This being done, if a chemist lives in the neighbourhood, procure one ounce of ether and half-an-ounce of laudanum, which dose in rather better than half-a-pint of water should be given, without any noise or bustle, every half-hour. Should no chemist be near, take two table-spoonfuls of turpentine, which beat up with the yolk of an egg, and give in half-a-pint of water. Place a pailful of cold gruel within easy reach of the horse, and see that there is an ample bed under it. These things being done, do not leave the place before the fate of the horse is determined, which it invariably is before thirty hours have expired; for the proprietor's presence is the only surety that orders are obeyed, where horses and the uninstructed are concerned.

CONGESTION IN THE STABLE.

This affection mostly attacks debilitated or fat horses. These creatures are driven far in a four-wheeled carriage, heavily laden.

One animal, of small size, has to drag an entire family. Else, the quadruped has to journey fast to avoid a shower of rain. The horse is flogged onward. A horse whose motions are quickened by the lash is not likely to be very closely observed. It is much more probable the speed will be blamed as laziness than the labouring life be pitied for exhaustion. Yet, when congestion follows, it is proof positive that the powers of nature were overtaxed.

The wretched slave, after the distance is accomplished, is taken from the shafts and led into the stable; it is hardly tied to the manger before a sickening sensation seizes on the body. The head



CONGESTION IN THE STABLE.

hangs down; the furnished rack and manger are not glanced at. This alarms the groom's prejudices. At length the man imagines it must be thirst which prevents his charge from eating. The attendant hastens for water, but on his return he finds the horse blowing; that is, panting or breathing quickly.

This symptom, which only denotes exhaustion, used to be regarded as the forerunner of inflammation of the lungs. Doubtless it would terminate thus seriously, were nothing done to arrest the progress of the affection. The change from extreme labour to perfect rest produces a revulsion of the system. The capillaries contract and soon become in a congested condition. Not only does this state affect the lungs, but it is present all over the body. Should the pulse be now taken, the artery will be round and gorged. The beat may be either quicker or slower than most books fix the

number at; but it will be very feeble and will convey no idea of vital activity. It hardly stirs, suggesting the surging of a tranquil summer sea upon a sandy shore. Partial perspirations may break forth, and the body may become wet with a fluid of no higher temperature than the skin from which it exudes. The feet are cold; the eye is fixed; the living type of obedience moves not when commanded; hearing is lost; all natural functions appear to be arrested, except the breathing, and that being involuntary, nevertheless, is evidently disordered.

If this condition be immediately attended to, it will disappear almost as quickly as it was exhibited. Take two ounces each of sulphuric ether and of laudanum; cold water, one pint. Give this drink with caution, as the animal to which it is administered is not conscious. Have patience with sickness and the whole will be swallowed; or the fumes will be inhaled and do almost as much good as the imbibition of the fluid.

The drink being given, do not leave the stable, Wait by the side of the horse, watching the effect of the draught. If in ten minutes the horse has not perfectly recovered, or be but partially restored, let another similar portion be poured into the body. More will seldom be required; but, notwithstanding, watch for twenty minutes after the last drink, as such fits occasionally vanish and reappear.

The rack and the manger must be emptied. Gruel is all we dare at present trust within reach of an exhausted frame. Though the animal would eat, solid food must be withheld. The body should be lightly, but well clothed; and a pail of gruel should be suspended from the manger, so that a heavy head need not be raised high to partake of it.

The next day the creature, thus treated, may return to its customary food and be as well as ever. But when the animal reached home, should the groom have been in a hurry, if company should have been waiting for dinner, and the horse should be hastily turned into the stall by the only servant kept by gentility; then the congestion is unseen, and any disease may follow it. This condition used to be, as fainting in the human being once was, treated by the abstraction of blood. But to bleed a debilitated horse, is to increase the cause of the affection, which it should be the province of physic to destroy. By the stimulant, which leaves

behind no inflammatory tendency; by the subtle distillation, which speedily traverses the frame, we revive the system and awaken lagging nature once more to vital activity.

When congestion is not noticed in the first instance, and has time to become confirmed, the original disorder is invariably swallowed up in some greater evil. Pneumonia and pleurisy are the favourite shapes which it assumes; but it has terminated in fatal enteritis.

BRONCHITIS, OR INFLAMMATION OF THE AIR PASSAGES.

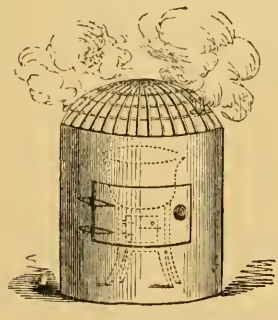
This serious affection is, mostly, the consequence of man's neglect. The master rides far and fast. He dismounts at some pleasant threshold and remains long under the roof. During that time the horse stands outside, either shivering in the cold or pelted by the storm. The general treatment seems to say, that life and machinery, being equally subservient to man's will, are, in fact, the same things in man's regard. Even the wheels and bars of polished iron, however, require care or they soon become useless; the thews and sinews of a living body cannot be abused with impunity. So plain a truth should be acknowledged by something more than words. Life and functions connect men and animals. Their habits may be dissimilar and their food not alike; but, when we consider the wants of each, their liabilities and their diseases, the approach to actual sameness becomes almost startling. The man who can enjoy himself without bestowing a serious thought upon the unfortunate steed, which has carried him hither and will bear him hence, deserves to lose the life of which he is so culpably careless. Change the places of the two existences. Let the horse be rendered comfortable and the man be stationed outside. The result would be the same: the man would in that case probably suffer from bronchitis. Does intelligence require a more startling evidence of the link which binds master and servant while sojourners upon this earth?

Bronchitis is indeed a painful malady. Originally situated upon and confined to the membrane lining the air tubes it has an aptitude to involve the entire contents of the thorax. Being the ailment of mucous membranes it requires cautious treatment. A small blood-letting may induce the prostration no tonics can remove; a slight dose of aloes often starts up the purgation no

astringents will check. It creeps on insidiously, and comes in so gradual a form, as if it intended to deceive the groom. The appetite, during the primary stage, is often unaffected—nay, is sometimes increased. Stablemen have a strong prejudice where feeding is concerned. The most educated of the class can imagine nothing more than a slight cold, while the corn is only partially consumed. Thus the disease, in consequence of delay, mounts into fury, before its presence is fully recognised, and it often leaves behind it evidence of its visitation.

Very rarely is the groom's attention excited during the approach of the disorder, or while a short cough simply bespeaks irritation; while the breathing is merely excited; while the legs are warm; while the mouth is moist, and the nasal membrane only a little deeper in hue than is positively consonant with perfect health. No! The stableman is content while any desire for food remains. Let appetite be quite gone; let the horse be averse to move; the cough sore, but evidently suppressed and painful; the breathing quick and audible; the nasal membrane violently scarlet; the mouth hot, dry, and clammy; the legs and body of uneven temperatures—here, cold as ice, there, of a dusty heat. When danger cannot be mistaken, and hope has almost fled—then, and not until then, does the groom acquaint the master that his horse is ill.

In a case of such a description, abstract no blood. Depletion is fobidden, when mucous membrane is disordered. The first thing is a large loose box. Into this is put the machine represented in the annexed engraving. It is a portable boiler, having a covering of iron wire. The steam, generated by the charcoal fire, soon renders the air of the place moist and warm. It must be kept boiling day and night. It is of more service during night than day, and it should be very gradually withdrawn.



STEAMING APPARATUS FOR HORSES WITH BRONCHITIS.

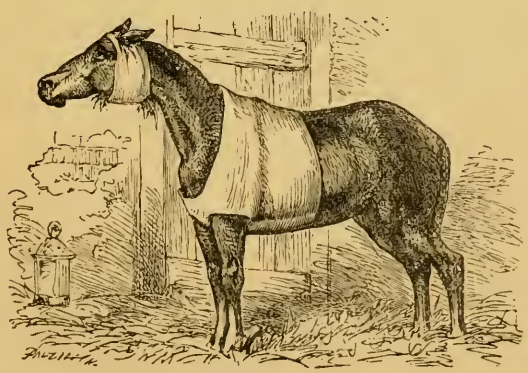
The water, as it is exhausted in the above boiler, should be supplied with more at the full temperature. Very little fire will then keep up the steam, though, as the fumes of charcoal are decidedly unhealthy, it is always well when those

fumes can, by means of a pipe, be conveyed to the outside of the building; if that be impossible, let every door and window be left open, the necessary admission of air may impoverish the steam, but the vapour is too dense to be entirely dispelled. The steam acts upon the lungs; warm, moist air being soothing and curative to the thorax affected with bronchitis. When the apparatus cannot be obtained, the large nose-bag should be frequently applied during the day.

Some scalded hay is also to be fixed under the throat by means

EIGHT-TAILED BANDAGE FOR RETAINING ANY SUBSTANCE AGAINST THE THROAT OF A HORSE.

of an eight-tailed bandage. A Mackintosh jacket is then laid on floor, and the horse gently led forward till one leg rests within one arm-hole. The opposite leg is to be raised and put through the other opening; the cloth is next lifted up and temporarily fixed upon the animal; afterwards, have six pieces of flannel, two three yards long and the entire width of the fabric, the others half-a-yard



A HORSE DRESSED FOR BRONCHITIS.

long and a foot wide. Saturate three of these with cold water; having folded the long piece, apply it over the back, equally to either side; the short pieces place upon the sides of the chest;

fasten the jacket over the spine; when the flannel is warm remove it; replace it immediately with other flannels, which should be ready for this purpose. Do this continuously for at least a couple of hours, after which time the flannel may remain on; but must, on no account, be suffered to become dry. The jacket and flannel should be worn for a week subsequent to restoration.

Then prepare the following:—

Burgundy pitch	Half-a-pound.
Powdered camphor . . .	Two ounces.
Powdered capsicum . .	Half-a-drachm.

Melt the pitch. Take the vessel which contains it off the fire; throw in the other ingredients, stir well, and apply while warm to the front of the neck, as low as the jacket will permit.

For bronchitis, consisting principally of aggravated congestion, prepare the following drink, and repeat it every half-hour, until the pulse has regained its tone; then give the drinks at longer intervals, and ultimately reduce them to three during the day, which continue till restoration is perfected.

Sulphuric ether . . .	One ounce.
Laudanum	One ounce.
Water	One pint.

Should no effect be produced after the third drink, discontinue the frequency of the ethereal medicine, and substitute the following:—

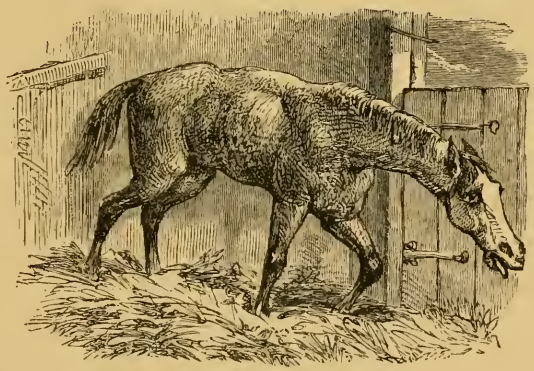
Infusion of aconite . .	Half-an-ounce.
Extract of belladonna (rubbed down with one pint of water) . . .	Half-a-drachm.

Persevere with the above till the pulse amends, when withdraw the aconite, but keep on with the belladonna, half-a-drachm of which may be added to each dose of the ethereal drink; which ought to be resumed, should amendment ensue upon the administration of the aconite draught.

Let the food consist entirely of thick gruel. The appetite occasionally is unaffected during bronchitis; but, however pleasant it may be to behold a horse masticate, all solids should be with-

held, especially during the acute stage. Nothing is so injurious to respiration as a loaded stomach, and a single meal (if permitted) would speedily aggravate the symptoms of this disease. When the disorder has subsided, food must be carefully introduced; the water should be, as grooms say, "chilled," or, in ordinary language, should have the chill removed. Boiled roots or crushed and scalded oats should constitute the earliest approach to natural diet. Hay should be given with extreme caution, the desire being to nourish the body, not to load the stomach. A bundle of grass each day may be allowed upon recovery being assured; and when hay is at length presented, mind that for the first month it is thoroughly damped; for nothing more retards recovery after bronchitis than the inhalation of those dusty particles with which hay too often abounds.

When the disorder is to terminate fatally, the proprietor, in the



THE COUGH OF INCURABLE BRONCHITIS.

majority of instances, speedily learns the fact. The pulse continues unamended at first, but soon grows very quick and tremulous; the breathing becomes more painful even to the spectator. Every inhalation appears to shake the body; yet, so eager is the desire for air, that the haste and violence of the respiration evidently defeat their object. The nasal membrane assumes a bluish tint; a foul, bloody froth hangs about the nostrils; the eyes are dull and fixed. The cough is the most distressing symptom. It occurs in fits, and during the paroxysms the wretched animal reels about. The noise cannot now be restrained; the horse has

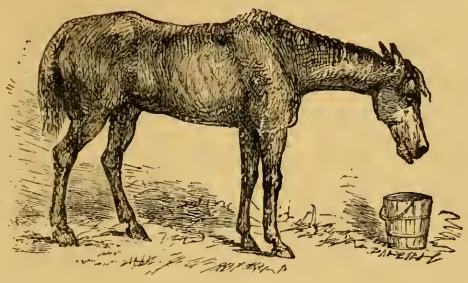
no strength to struggle with disease. The sound which shakes the sore lungs and checks the breathing that was already short to suffocation cannot now be suppressed. It continues until a quantity of discoloured fluid is ejected from the nostrils, then a brief respite ensues; but, as time progresses, the fits grow more severe and much longer, while the strength to endure them even more rapidly decreases.

It reads sadly, that hundreds of horses have thus perished without making any impression upon either masters or men. The directions, which have been given at some length, will probably be discarded by grooms as far too troublesome; they like the man who can give physic to a horse when the animal is sick, and "wants no more bother made." The proprietors will object to the personal superintendence which is necessitated. They seldom exercise that supervision over their sick horses which common sense dictates; all is left to others. The veterinary surgeon sends medicines, and gives his instructions to the groom, who constantly thinks he knows better how the patient should be treated, which is usually at variance with that which has been prescribed. This difference of opinion is by no means a guarantee that the advised treatment will be carried into effect; and for this reason, it is the duty of the owner to constantly inspect his horses when suffering with disease, as the "eye of the master will not only fatten," but sometimes save the life of the horse.

PNEUMONIA—INFLAMMATION OF THE LUNGS.

Under this title our grandfathers congregated all affections of the lungs. Congestion, bronchitis, pleurisy were all regarded as stages of pneumonia. True pneumonia is, consequently, now more rarely encountered; such a result accords with the knowledge gained by anatomical investigation concerning the structure of or the substance of the lung. The bronchial tubes constitute a large portion of these organs, but their disease is termed *bronchitis.* The pleura covers the lungs; but its inflammation is called *pleurisy.* The blood is affected during all disorders, but the vessels themselves are rarely implicated; involvement of the absorbents constitutes glanders and farcy. Yet, when the tubes, covering veins, arteries and absorbents are abstracted, there remains only

cellular tissue. That structure is not apt to take on inflammation, and when it is so implicated, the inflammation of cellular tissue is



THE COMMENCEMENT OF PNEUMONIA.

regarded as *rheumatism:* consequently, there remains only a species of general disorder of all the constituents to stand for pneumonia.

Horses supposed to have perished from pneumonia, not unfrequently, when examined after death, present hydrothorax or dropsy of the chest; thus proving the pleura to have been affected. However, such vivid descriptions of pneumonia are bequeathed us by our ancestors, that we are, to a certain degree, overpowered by the authority of assertion.

When acute pneumonia (as it is called, which really represents

THE POSITION ASSUMED BY THE HORSE DURING AN AGGRAVATED ATTACK OF PNEUMONIA.

a sub-acute disorder of all the contents of the lungs) does occur, it is rather lingering in its development; the breathing is laboured

and slightly accelerated; the pulse is less increased than would be expected; the artery is full, and the beat seems driven by some hidden force through a gelatinous obstacle; it bulges out, and then all is still for an interval, after which the operation is repeated. The horse has lost all spirit; indeed, a considerable portion of its consciousness has evidently departed. It stands as though from giddiness it feared to fall; its legs are separated and strained outward to the furthest limit.

The head and ears are dejected; the coat rough; the extremities cold; the body without warmth; the visible membranes discoloured, and the bowels costive—in short, the animal appears oppressed by some heavy misfortune. Feeling seems half dead, thus we are warranted in imagining that the attack has embraced all the component structures of the lungs, and that it consists in no small degree of congestion.

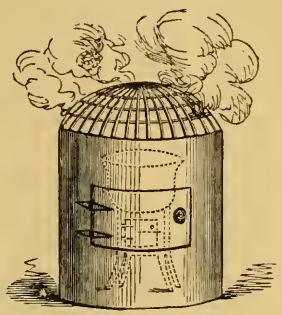
Some years ago horses with this disease were bled to fainting point; and as the pulse was quickened by such abstractions, phlebotomy was again and again resorted to until the animal, not able to withstand the effects of such repeated depletion, has at last fallen dead, the victim of ignorant and cruel practice.

When you first behold the horse, carefully examine it; place your ear to the side. In health there is only a gentle blowing sound audible; if more than that is heard; if something within the chest seems to grate or suck; if, in addition, any noise, as of a huge pair of bellows at violent work is detected, make up your mind to a case of pneumonia. No time is to be lost; procure a large and airy loose box; strew it thickly with tan. Do this, because pneumonia has an aptitude "to fall into the feet," as grooms say, or, in other language, the disease is subject to metastasis, and the inflammation will sometimes quit the lungs to reappear in the feet. Something soft and cool is most likely to prevent such a mishap; therefore, when the tan is strewn upon the floor, moisten it with a watering-pot, and have the iron shoes taken off the animal.

Place a pail of water within easy reach of the horse. Food, even gruel, is not now required. If it is winter, put a hood upon the head and throw a loose cloth over the loins and quarters; then introduce the steaming apparatus, and set it to work with all speed, leaving every window and door open, while the vapour is

generated. The air being loaded with vapour, take off all clothing; but give in the first instance, so soon as it can be procured, the following drink:—

Solution of aconite root	Half-an-ounce.
Sulphuric ether . .	Two ounces.
Extract of belladonna (rubbed down in half-a-pint of water) . .	A drachm.



A STEAMING APPARATUS.

Repeat this dose three times in the course of the day and once during the night, keeping up the steam all the time. Watch the pulse and observe the breathing. When the first amends, the quantity of aconite may be diminished; when the last grows easier, the amount of belladonna may be decreased.

These medicines should be persevered with, increasing the ingredients or diminishing them, as the symptoms warrant. Thus, if the pulse prove very obstinate, six, or even nine doses of half-an-ounce of solution of aconite in a little water, without other ingredients, may be exhibited in the twenty-four hours. Should the breathing be severe, the belladonna may be augmented in a similar proportion. Until the symptoms are more than merely amended, the nourishment ought entirely to consist of hay-tea, with a little oatmeal boiled in it. When improvement decidedly takes place, the hay-tea may be made a little thicker, and a couple of pounds of boiled potatoes allowed per day. So soon as the appetite seems to be eager for food, a pint of crushed oats, thoroughly scalded, may be given six times during the day. Great care must, however, be taken not to overload the stomach, or to permit a full meal: a single gorge is likely to provoke a return of the disorder. Little and often must be the rule at first; and the quantity may be increased while the frequency is diminished, as recovery is confirmed. Let some days elapse, however, before any hay is presented: this substance rather amuses the horse and fills out the stomach than nourishes the body.

Order the cook to prepare the gruel, and see that she does it with as much care and cleanliness as she would exercise for any Christian. The groom's gruel is hot water, which may or may not

be boiling, stirred upon a certain quantity of meal. A lady may conjecture how she would relish such a composition sent to her sick chamber; and the horse is as nice in its taste as any human being possibly can be.

Neither permit any grass to be put before an animal which is recovering from pneumonia. Grasses of all kinds contain the least possible nutriment in the largest possible bulk. The object

A MUCH WISHED-FOR SIGHT DURING DISEASE OF THE LUNGS.

now is to accomplish the introduction of nutriment in the most concentrated form. A distended stomach impedes the action of the diaphragm, and thereby is most injurious to the breathing.

The first marked sign of improvement during pneumonia is the animal lying down. When this wished-for sight is before your eyes, do not enter to disturb the prostrate horse. It has, under disease, stood for several days. Its limbs must ache and its feet feel sore: make no noise, therefore. Respect the repose of the sufferer, and be grateful that your horse, probably, has escaped from danger.

If, subsequent to recovery, the restoration to perfect health is not so rapid as you could desire, be very particular about the feeding. At the same time apply a strong blister upon the front of the throat, down to the chest and between the legs. That blister

having worn itself out, apply another upon the sides of the throat and the *upper part* of the ribs; but respect the sides of the thorax; because the animal rests on these parts, and, during recovery, rest is of more value than medicine. Nothing, therefore, should be permitted that is likely to prevent so beneficial a state from being indulged in. Abjure all purgatives—these favourite potions are too debilitating for pneumonia; forbid all mashes. Nature, as she permits recovery, will, at her own time, relieve the body; adhere to the treatment which has been laid down; permit no tonics; care and good food are the best restoratives. But, above all things, be certain the health is thoroughly recovered before the horse, which has been seriously ill, is again compelled to labour.

ADHESION 1. THE PLEURA PULMONALIS UNITED BY DISEASE TO THE PLEURA COSTALIS.

a a. The pleura pulmonalis, or the natural covering of the lung.
b b. The pleura costalis, or the lining membrane of the chest.
c. The false adhesion, fixing the lung and preventing its full expansion.
d. The divided surface of the lung.

HEPATIZATION 2; OR THE LUNG BY DISEASE CONVERTED INTO A SUBSTANCE RESEMBLING LIVER.

Several states are mentioned as the consequence of pneumonia. Adhesion of the lung to the covering of the thorax is alluded to as one result of this disease; but before adhesion could take place, inflammation must have existed in the pleura, which lines the interior of the chest and envelops the lung itself; consequently, pleurisy must have been present before the pleura could be sufficiently inflamed for adhesion to ensue. The other condition is the result of congestion; the tubes and vessels are clogged alike; the lung is converted from its soft and spongy natural texture to a firm and solid substance resembling liver.

And now the important question as to the cause of this malady. Nature, in mercy, spares the peasant those visitations which are heaped upon the rich.

The horse which is pampered, or has much to eat and little work to do; the creature, which for days may stagnate in the stable and then be suddenly brought forth to extraordinary exertion; the horse, whose owner is capricious; the animal, whose work is uncertain; the quadruped, which now is idle and now is required to make good the lost time, is the living being prepared

to exhibit any slow disorder—to consume itself with the disease which an existence, properly treated, would possess the energy to resist.

Is it strange that a creature doomed to so much and such deep subserviency occasionally fails, even when possessed by what men call the best of masters? Is it just reason for wonder that flesh occasionally rebels against the treatment which human ignorance subjects it to? Were the horse not a very hardy animal—were not the life implanted as firmly as the frame is set—it would not survive a tithe part of the usage it now endures, and, notwithstanding, continues to live on and to obey.

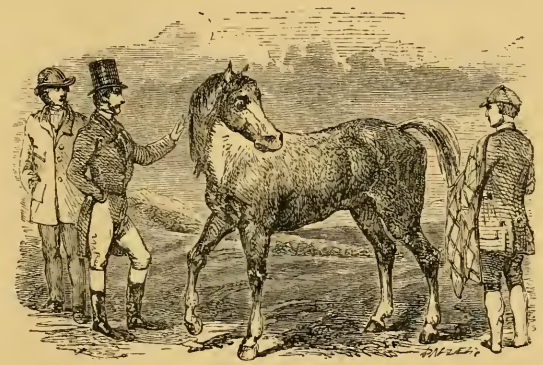
PLEURISY.

This most painful disease, like those of the lungs generally, visits valuable horses during the years when they are most esteemed. The unbroken colt is seldom attacked, and the aged animal is, to an almost equal degree, exempt. The young steed, newly stabled, is liable; and that liability remains up to the sixth year, when it gradually subsides. It is a terrible affliction. Its anguish is localised and concentrated. It is inflammation of the fine, glistening membrane, covering the lungs and lining the inside of the chest. At every inspiration and at every expiration the inflamed surfaces must move upon each other. To breathe is the primary necessity of the creature's life. It cannot exist and refuse to inflate the lungs; yet is existence purchased at a price worth many years of happiness. The inflamed surfaces cannot remain quiet; yet, to render the condition of motion the more acute, inflammation stops the secretion, which, during health, smoothed and lubricated the passage of the membranes. During disease the pleura is swollen, rough and dry; it grates or scratches as one surface is, by the necessity to breathe, dragged over the other.

Membranes are sensitive in disease in proportion to the fineness of their structure, and to their insensibility during health. The pleura belongs to what are termed serous membranes. These line closed cavities—as the chest, the abdomen, and the joints. Of the existence of none of these are we conscious while they are free from disease; but, let the inflammation set in, and it would be difficult to decide which of them is the most painful. Fortunately, how-

ever, pleurisy, when concentrated or singly present, terminates generally by the second day.

The symptoms, therefore, are quickly developed. The violence on their first appearance has been so great, that an attack of pleurisy has been mistaken for a fit of spasmodic colic. A little care will guard against so fatal an error. The pulse, in colic, is always natural at the commencement, and the fits, when they first occur, invariably of short duration. In pleurisy, the vessel *strikes* the fingers; the blow is strong, and the artery is thin; the pain is continuous; the agony never remits or ceases; the horse never feeds; the body is hot, and indicates the fire within; the feet are



A HORSE SUFFERING UNDER PLEURISY.

icy cold; the muscles are frequently corrugated in patches, and partial perspirations break forth upon the surface; a cough is often, not invariably, present; it is always suppressed and dry; it suggests no notion that the intent is to clear the throat; the inclination to cough, from the larynx sympathising with the lungs, is great; the feeling cannot be entirely mastered,—but the horse is fearful of indulging an impulse, which would violently shake the inflamed chest. The ear, placed against the ribs, detects a grating sound, and the respiratory murmur is less clear than usual. Pressure made on the free interspaces between the ribs sometimes deprives the animal almost of consciousness; it shrinks, and were the torture continued it would fall. At other times anguish maddens even timidity,—the foot is lifted, or the teeth are displayed, to

repel the tormentor. When left alone the head is frequently turned toward the side, with a piteous stare of wonder and inquiry. Altogether, the animal is, as it were, inspirited by the disorder.

The fore foot is scarcely ever quiet, it constantly paws, which action in the horse always expresses impatience or pain. The breathing, of course, is peculiar; a full inspiration the animal dare not take. Before inhalation is half completed the ribs fly backward. However, the backward action has hardly been accomplished before anguish once more compels a change; thus, the breathing, to a looker-on, appears short, jerking, quick and always imperfect.

The treatment must be active, as it is likely to be short. At the first outbreak, place the sufferer in a cool, loose box; put woollen bandages upon all the legs, but leave the body unclothed; give, every quarter of an hour, a scruple of tincture of aconite in a wine-glass of warm water. Feel the pulse before each dose; when that has softened, discontinue the aconite; every second hour then administer one ounce of sulphuric ether and of tincture of opium in a tumbler of cold water, to dispel any congestion that may lurk about the pleura, and also to lend smoothness or fulness to the pulse.

Pursue these measures for the first day and night. When the pulse and pain are amended, should the cough remain, introduce the steaming apparatus twice described under the headings of the two previous articles. The bowels are generally costive; be not alarmed; with the departure of the disorder they will relax. Place luke-warm water within the easy reach of the horse; but before the symptoms abate, introduce nothing of a more stimulating nature. When the disorder lessens, hay-tea may be allowed; as improvement increases, the diet may be gradually augmented after the manner described, when considering the treatment of pneumonia. Such care is essential, because any violent disorder in a confined part of the body has a tendency to involve other structures, and the danger of this increases as the inflammation is removed from the surface.

The tranquillising of the respiration, the softness of the pulse, and the return of the appetite will announce the departure of pleurisy. When these longed-for indications are remarked, blister the throat and chest; should any seeds of the malady appear to

be not entirely removed, repeat the blister to the throat and chest. Should the bowels not be relieved, throw up copious enemas of blood-warm water; nothing more must be attempted. Aloes or salts are poisons during pleurisy. Wait patiently, and in time the establishment of health will restore all the natural functions; or, if they are very confined, a bundle or two of cut grass may be presented with the usual food.

A yellow, transparent discharge from the nostrils, occasionally streaked with blood, and more or less otherwise discoloured; a horrible anxiety of countenance, which seems to appeal mutely to every human being the saddened eye rests upon; quickened breathing, a more rapid but a sinking pulse, and a leaden state of the nasal membranes declare the probability of a fatal termination. Pleurisy, however, mostly ends in hydrothorax, for the character of which the reader is referred to the succeeding pages.

Now comes the sad inquiry, What is the cause of pleurisy? All kinds of things may excite it; but those things which lead to so much suffering in an inoffensive animal are under the control of man. Over exertion, being driven or ridden far and fast, the spirit being stimulated, and the energy promoted by potent drinks; for men will give the contents of the public-house to the horse when a wager is at stake, and will lash, while the limbs can move, to win any pitiful bet—these circumstances not unfrequently provoke pleurisy. Injuries received externally not unseldom start up internal inflammation. Hurts calculated to lead to so serious an evil, together with broken ribs, will not be surprising to those who have seen the unseemly instruments which man will, in his rage, seize upon to strike the animal with. Colds, aggravated by change of temperature, as waiting long in the rain and being flurried home afterwards; inattention in feeding, thus generating a plethora, is apt to disorder any internal organ, and many other such like causes will generate the disease.

And what right has man to inflict so much agony upon any life entrusted to his care? What right has humanity to complain of tyranny in its superiors, when the human race can neglect and entail such anguish upon the beings beneath them? The greed of gain or the pride of winning are the first motives assigned as the promoters of this terrible affliction; next comes the gratification

of passion; then follows carelessness for another's welfare, etc. etc. Which of these several causes is worth the torture of a living body? such torture, too, as the rack cannot equal, and human malice is happily forbidden to rival!

A little self-restraint instilled by a better plan of education; a little more humanity enforced by the teachers of religion, to instruct that man should not view himself as the owner of the earth which he temporarily inhabits; that man should not consider himself the proprietor of the lives which share the globe with him; that man should be actuated by genuine CHRISTIAN LOVE towards all animated nature, feeling kindly for the lives akin to his own, and acknowledging, as fellow-sojourners, the creatures by which he is surrounded;—then how much affliction might be eradicated from that which wickedness alone renders a "vale of tears?"

HYDROTHORAX.

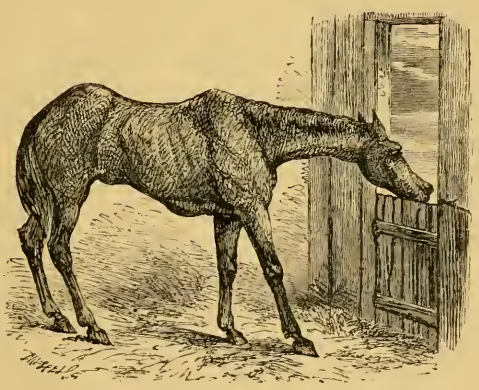
This is the consequence of the latter stage of pleurisy; or rather, to speak with caution, we fear it is often the result of the severe treatment adopted to dispel that malady.

Man leaves his property, which is very ill of pleurisy over night, hopeless that the animal can survive till morning. On returning, however, to the stable early on the following day, to his surprise he beholds the horse actually looking better. The pain has evidently abated, if not altogether departed; the eye is more cheerful; the manner more encouraging. Having observed this, attention rests upon the flanks. The motion of these parts is greatly increased. They are now forcibly brought into action. The suspicion is awakened. The ear is applied to the chest. Near the breast-bone, or low down, all is very quiet. A little higher up nothing can be heard, but rather past the middle of the ribs the sound of breathing is once more detected. Again and again is the experiment repeated, until the disappointed proprietor is forced to believe that which is against his hope.

Still clinging to chance, after conviction has gained possession of his mind, there is another trial he will make to render despair a certainty. He seeks some man—any one will do; and having found a loiterer, he returns with him to the stable. He places this individual upon one side of the horse, and tells the man to

slap the side of the animal with the open palm, when the word "now" is spoken. This being arranged, the master goes to the opposite side. He puts his ear to the place where the silence ceased. Having assured himself the spot he has chosen is correct, he pronounces the monosyllable "now." Directly afterwards a dull sound is heard, and a metallic ring or splashing noise is soon afterwards audible.

All now is confirmed; yet, "to make assurance doubly sure," the owner tries to take the pulse at the jaw. There is none to be felt! The hand is then placed near the chest, upon the left side and over the region of the heart. The sensation of a throb, coming through water, is perceptible. The last requirement is confirmed.



A HORSE DYING OF HYDROTHORAX.

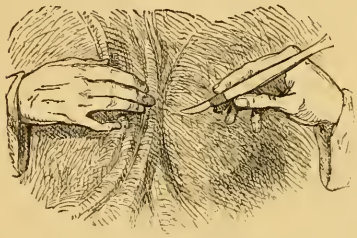
The horse has dropsy of the chest, and the termination of the disorder is all but certain.

The first thing to be done, in these cases, is to draw off the liquid before it soddens the pleura and further distresses the already laboured breathing. The manner of performing this operation is very simple, and the operation itself remarkably safe. A spot near the inferior margin of the chest being selected, a small portion of skin, between the eighth and ninth ribs, is pulled forward, and then a narrow slit with a sharp knife is made upon the place which the skin originally covered. A trochar, armed with a stilet, is then inserted into the opening, and so much force applied as suffices to propel it onward. The moment all resistance

ceases, the trochar is within the cavity of the thorax. The stilet is then withdrawn, and the water usually flows forth.

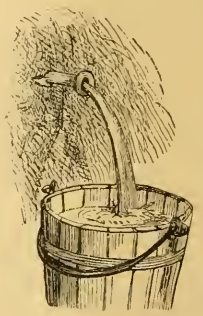
There is in this operation no danger of piercing the lung. The trochar must be driven upward and onward, very far and very forcibly, to induce such an effect. The lung is protected from all lawful violence by the water, on the top of which it floats.

There is, however, a dispute concerning how much of the fluid should be extracted. It is a good rule to take all you can get, or all the condition of the horse will permit to be abstracted. Do not commence the operation with any determinate quantity in your mind. Take all, if the horse will suffer so much to be



MAKING THE PRIMARY INCISION FOR TAPPING THE CHEST.

A TROCHAR WITH THE STILET UPON IT.



REMOVING THE FLUID IN HYDROTHORAX.

withdrawn; but if the animal, after the loss of a quart, shows signs of approaching faintness, withdraw the trochar, let the skin fly back, and wait a more favourable opportunity for the next attempt.

In an hour or two the trial can be repeated. Make a new opening,—for never risk exciting irritation in the original wound by again thrusting the trochar through it. There are but few precautions to be observed during the performance of tapping the chest. It is usual to teach that the posterior border of the ribs is to be avoided, because this portion of the bones is grooved for the reception of the artery. Anatomy, however, shows that such vessels are amply protected by the grooves in which they travel.

There is also some selection to be made in the trochar which shall be employed. If the tube be of too great a size and permits the fluid to gush quickly out, nature may sink under the sudden change induced: the water, consequently, ought to be very gradually abstracted. For this purpose, the instrument cannot well be too small. The most diminutive of those made for human practice will be quite large enough, so that the bulk of liquid within the chest may be insensibly removed, and the horse be scarcely aware of the change. Those trochars, however, which are made for the human practitioner will not be long enough; therefore one must be procured longer, but of the like bore.

Sometimes, after the trochar is properly inserted, no fluid will pour forth; the operation is then all but hopeless. It must have been so long delayed that various substances have been secreted. These cover the interior of the chest. They obstruct the mouth of the cannula and prevent the liquid issuing by the tube.

It is customary in these cases to employ a whalebone probe. This is inserted up the trochar, and then moved about in different directions. The intention is to break down the layer of pus or lymph lining the thorax, and to allow the water to leave the cavity. But this is almost needless, as the author does not recollect a single case of this description which ultimately survived.

It is also advisable to draw off the fluid from both sides at the same time, so there may be no pressure upon the delicate divisions of the chest, and upon the important vessels within them. But happily the fluid is, in the first instance, generally confined to one side only.

Always pull a piece of skin either backward or forward before the incision is made through the integument. The reason for doing this is because, when the trochar is removed, the skin may resume its proper place and act as a valve, keeping out the atmosphere from the cavity; for external air, getting into the interior of the chest, is proved to be most injurious to life.

There is to be tendered but one last admonition; even this has been in a great measure anticipated by the previous observations. The animal must not be left during the operation. Whatever time may be consumed by the withdrawal of the liquid, the operator must remain a patient spectator of the slow abstraction. For, if the horse should be left, syncope may come on during such absence,

and the animal on the person's return be found prostrate upon the ground. On the first sign of weakness the cannula should be at once removed; for, should it be suffered to remain regardless of this caution, the horse may even die through sudden collapse.

The treatment after the withdrawal of the fluid is entirely changed; pleurisy has now departed and weakness is left behind. The most nourishing but carefully prepared food must be given; boiled oats and boiled carrots may be allowed in any quantity which the animal will consume, while the following ball should be administered night and morning:—

Iodide of iron	One drachm.
Strychnia	Half-a-grain.
Sulphate of zinc	Half-a-drachm.
Extract of gentian and powdered quassia	Of each a sufficiency.

That which will denote a fatal termination is restlessness, neighing, partial sweats, swellings under the region of the chest, and a distressed breathing which nothing can relieve. The death struggle is as short as the disease has been painful.

DISEASE OF THE HEART.

This affection is characterised by various names in scientific books—as carditis, pericarditis, hydrops pericardii, inflammation of the pericardium, etc., etc. All such conditions in the horse were discovered by examinations instituted after death, when, unfortunately, all opportunity of observing the symptoms had ceased. Veterinary science cannot distinguish one state from another while life exists. Probably this deficiency may be attributed to the inutility of such discrimination. Disease of the heart in horses is incurable. In man, who can strictly conform to his physician's orders, avoid excitement, abstain from exertion, eat only such a quantity of such a food prepared after

DISEASE OF THE HEART IN THE HORSE.

such a manner, feed at such an hour and rest at such a time, who can live by rule; in man the diseases of the heart are only to be delayed, not driven from their certain issues.

Practically, therefore, so the heart be diseased it is of small import what shape the disorder may assume. The death is always sudden. It is likely to occur when the horse is journeying at its topmost speed, when accident generally follows. Consequently, it is perhaps wiser to take the life thus afflicted and thus dangerous. The horse may appear blooming, may even be skittish, yet the existence may at any moment be cut short. Auscultation affords the surest means of detection. Place the ear close to the left side and lower part of the chest. If any unusual sound be audible, conclude the heart to be diseased.

The signs visible externally are sometimes sufficiently emphatic to admit of no doubt. The eye is expressive of constant anguish; the countenance is haggard; the pulse is feeble and irregular, but the heart throbs. Its throbs are visible, and frequently they are to be seen as plainly on the right side as on the left. The beat is occasionally so violent as to shake the body. The carotid artery can be felt to pulsate in the neck. The regurgitation within the jugular vein is nearly always excessive—it often reaches almost to the jaw. It takes place by jerks, which ascend higher and higher, each becoming less and more weak as it mounts upward.

An attempt to represent this has been hazarded in the illustration. It is, however, impossible to truthfully depict action; and the reader will comprehend the jerks in nature do not all occur at the same period, but the first subsides before the second can be exhibited.

The appetite is sometimes ravenous; more often it is fastidious. The breathing is not accelerated, excepting during the existence of pain; lameness is occasionally witnessed in one fore leg; dropsical swellings and abdominal pains have been observed. The animal, when progressing, will suddenly stop, tremble and appear about to fall; as suddenly it will recover and proceed upon the journey. Noises expressive of acute anguish are, under the impulse of the moment, occasionally uttered. Sometimes the horse cannot be made to move, and it is always averse to turn in the stall. Often it is seen to yawn, but more frequently has been known to heave long and deep-drawn sighs. No ascertained sign, however, an-

nounces the climax of the disorder to be near at hand. Death is always unexpected, and therefore is a surprise.

There is no doubt that diseases of the heart are more common to those horses who are compelled to gallop or trot at top speed, or strain hard in drawing heavy loads, than to horses whose work is not so exacting. In fact, excessive physical exertion of any kind, whether that of pace or of heavy draught, excites the circulation and forces the heart to increased action, when the currents of blood pass uneasily through the arterial and venous trunks, and in so doing exert a baneful action on the heart.

The veterinarian is seldom called upon to treat heart disease, and has not the same experience of these diseases as the physician, for the reason that man, even with an incurable disease, must be treated, but the horse with such is usually sent to the knacker's; consequently it is from human medicine that valuable information has been received. Although cardiac disease with man is incapable of cure he may, by a careful system of life, by avoiding excitement, etc., live to make old bones; but the once ruptured vessel must never be strained; the enlargement of the heart or the injury of the valves, etc., must never be imposed on—he must live quietly if he wishes to prolong his days. The men most prone to heart disease are athletes. It matters little what kind of sport they follow, although perhaps runners are the most liable. From this it will be observed that violent physical exertion injuriously affects both man and the horse, and it involves in disease the heart, the cause and effect being the same to the one as the other.

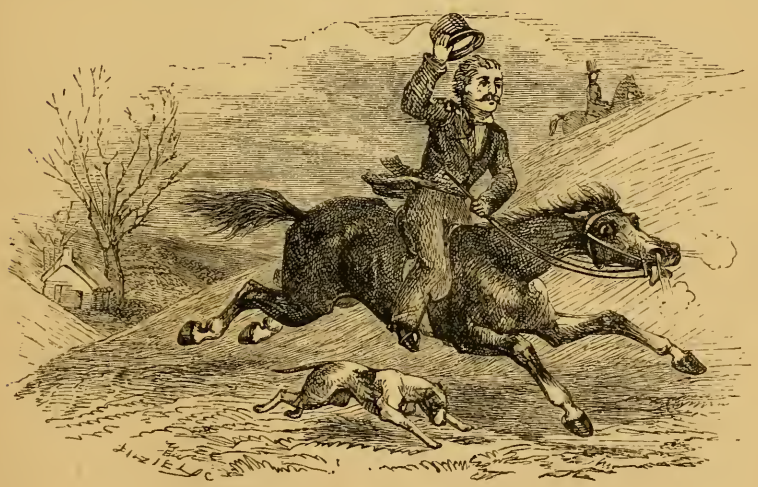
Many racehorses have died from cardiac affections, which during life have never been recognised; many a thoroughbred, said to have been a roarer, has made a noise like one, but has not been the subject of throat paralysis. Other cases could be cited; but, as heart disease is incurable, we advise our readers to gradually, little by little, introduce their young horses to work, and never impose upon them until they are inured to it. Two-year-old racing is a sin which common sense recognises. It not only makes unformed machinery work, but induces diseases, the worst of which is heart disease.

CHAPTER VII.

THE STOMACH, LIVER, ETC.—THEIR ACCIDENTS AND THEIR DISEASES.

SPASM OF THE DIAPHRAGM.

THIS is generally provoked by the heedlessness of the rider. A horse is "overmarked," as the condition is technically called, when the animal is urged onward to the point of falling. The person



THE YOUNG GENTLEMAN AND THE OLD HORSE.

who may occupy the saddle then becomes conscious of a strange and loud noise coming from the body which he strides. It appears to the equestrian as though some demon were located within the carcase, and were violently striking the sides. Should the indication be observed, the noise will be found to proceed from behind, or immediately under, rather than from any part anterior to the rider.

The noise is produced by spasm of the diaphragm. The horse must, as the word "overmarked" seems to imply, have been pushed far beyond the point where man should have pulled the rein. A little distance further, after the symptom is developed, will bring the animal to the ground. Let the check, therefore, be immediately given; the rider should dismount; the loins be covered with the gentleman's coat, if nothing better be at hand: he who has caused the misery is bound to make any sacrifice for its alleviation. The girths should be loosened, the bridle removed, and, when time has passed for the system to become slightly tranquillised, the sufferer should be very gently led to the nearest shelter. So soon as it is under cover the following drink should be administered, but time should be taken to give the medicine, as the condition of the horse forbids all haste:—

Sulphuric ether	Two ounces.
Tincture of camphor . . .	Half-an-ounce.
Tincture of opium	One ounce.
Cold water or gruel . . .	One pint.

This should be repeated every quarter of an hour till four drinks are swallowed; then the intervals should be lengthened to half an hour; and, as the symptom decreases, the medicine ought to be administered at still longer periods, and ultimately, but gradually, withdrawn.

When the animal is first brought in, bandage the legs or sponge with cold water the mouth, nose, eyes, and anus; this done, the body is to be superficially cleaned. Sweat is to be removed, and dirt taken off; the ears pulled, and the head made comfortable; the tail and mane having been previously combed, a hood and body clothing should be put on.

All this should be well understood beforehand. While it is being accomplished not a word should be spoken; nothing is more soothing to an agitated system than perfect silence. Wet swabs should then be placed upon the feet, a pail of gruel suspended from the manger, and a man left to warn off all noisy strangers from the exterior of the building, for during spasm from over-exertion perfect quietude is quite as essential as medicine.

Spasm of the diaphragm, if taken in time, is not generally fatal; and no man, however determined a "Nimrod" he may be,

is justified in proceeding after having recognised so mysterious a warning. The sound before alluded to must emphatically inform him all is not right with the animal on which he is seated. It is folly to urge that the horse enjoys the chase as much as the rider; no life would, for its own pleasure, run itself to a spasmodic exhaustion. Old hunters may have left the field to follow the hounds; the animals, however, obey only the impulse of education, and did what they imagined would gratify their superiors. The horse is given as a servant to man; the creature is obedient to its destiny; to serve is its lot; to please is its reward.

When spasm of the diaphragm terminates fatally, approaching dissolution is announced by easily-recognised signs. The pulse cannot be felt at the jaw; the heart only flutters; the feet are icy cold; a yellow discharge drains from the nostrils; the breath becomes fœtid; the pupil of the eye enlarges; the horse wanders round and round its box; it soon sinks and perishes.

ACUTE GASTRITIS.

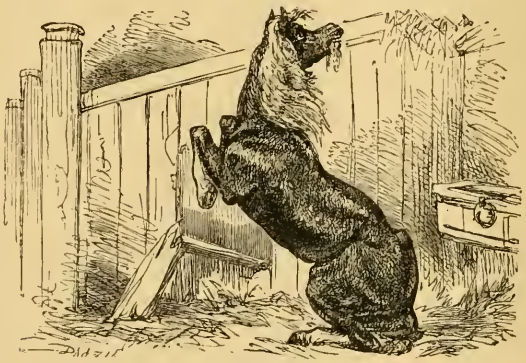
This most painful affliction is only known in the horse as the consequence of some poisonous substance being swallowed. Poisoning entire teams of valuable horses has followed the use of certain powders, these being mixed with the corn; the intention was to improve the personal appearance of the animals to which the drug was administered. Carters have a large faith in condition powders, and a distant belief in the *magic* of medicine. In their ignorance, they spend their hard-earned wages to procure the stuff, too often compounded of agents which never should be trusted in the hands of the uneducated. The men argue, if these powders, say one spoonful given each night, will make the horse bloom in a fortnight, two spoonfuls must do the same thing in a week; the spoonful possibly contains the utmost limits of the dose; that quantity exceeded may endanger or destroy life. But ignorance is always impatient. It ever desires the speediest results; and, if accidents attend its eagerness, indignation should be visited upon those who put responsible trusts in such keeping—upon the men who, for gain, sell poisonous drugs to the obviously uninformed.

Books and charts are published explaining the various anti-

dotes and tests to be employed for the detection and counteraction of the different poisons. Such authorities are of little service in the stable; the tests require care and time for their application; the symptoms are mostly so urgent as to permit no leisure for scientific inquiry. In an acute case, dependence must be placed on general principles, and Fortune must be relied on to guide the result.

Certain poisons act instantaneously and without any warning sufficiently energetic to be interpreted, as the twigs or leaves of the yew tree.

Other agents immediately establish the lesson which sometimes speedily kills, but more often produces consequences which will ultimately destroy life, though death may be some time before it occurs—as the mineral acids, etc.



A HORSE SUFFERING FROM ACUTE GASTRITIS.

The presence of particular kinds is announced only by violent disorder—as powerful diuretics and potent purgatives.

The symptoms, therefore, are not decided; the carter has his motives for silence, and the inability of the horse to vomit forbids the earliest announcement of deranged stomach. The time for antidotes has generally passed before attention is excited; to support the life, in the hope that it may survive the destroyer, is evidently the best thing which can, under such circumstances, be adopted. Chloroform, ether, and opium, render the body insensible; and, by sparing the nervous system, certainly existence will be prolonged. Purgatives had better be withheld. They may already

have been administered in enormous doses; fearful amounts of aloes destroy life, without purgation being exhibited.

Against alkalies there does not exist the same objection. Carbonate of magnesia, carbonate of soda or of potash may, in quantity, be mixed with gruel and horned down; both opium and ether may be blended with the drink. Should the pulse be low, a drachm of carbonate of ammonia may be added to each dose of the other ingredients. Should corrosive sublimate be in any degree suspected to be the agent employed, mix one dozen eggs with the other components; these will in no way detract from the operation of the drench.

The mixture should be given in as large quantities as the animal can be induced to swallow. The gruel should be quite cold, and one quart should constitute a dose. No bleeding should be permitted; the abstraction of blood promotes absorption; to prevent the absorption of the poison is the present endeavour. The following draught contains all that can be recommended, so long as ignorance of the actual poison it is desired to counteract exists.

Sulphuric ether and tincture of opium	Of each three ounces.
Carbonate of magnesia, of soda or of potash . . .	Four ounces.
Gruel (quite cold) . . .	One quart.

To these may be added, should the pulse be of a sinking character:—

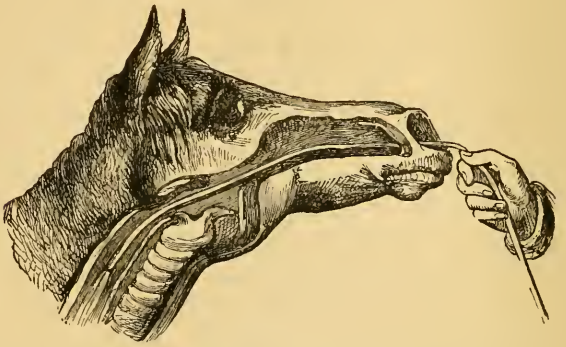
Carbonate of ammonia	One drachm.

If corrosive sublimate is known to have caused the agony, one dozen raw eggs ought to be blended with the drench.

Use discretion in the administration; but repeat the drinks as often and as quickly as can be accomplished without adding to the distress of the horse. Regard the state of the animal, and, if weakness be present, take time when giving the drench. Should delirium be displayed, do not trust to the natural functions; employ Read's pump, with the horse catheter attached, and inject, with all despatch, the whole quantity at once through the nostril.

The symptoms of poisoning are various; they are also modified by the strength upon which they act. The annexed list, however, contains the general appearances by which poisoning is announced,

though the whole of the symptoms are never simultaneously exhibited:—Loathing of all food; extreme thirst; redness of the nasal and conjunctival membranes; discharge of ropy saliva; frequent eructations, which smell pungently fœtid; colic, rolling on the ground, pawing, striking at the abdomen, etc. etc.; tucked-up flanks; heaving; panting; small, quick pulse; superpurgation; violent straining; passing of mucus in large quantities; protrusion



HOW TO GIVE PHYSIC, WHEN THE USUAL MODE OF ITS EXHIBITION IS ATTENDED WITH DANGER.

and inflammation of the opening; glances at the abdomen; prostration of strength; convulsions; madness and death.

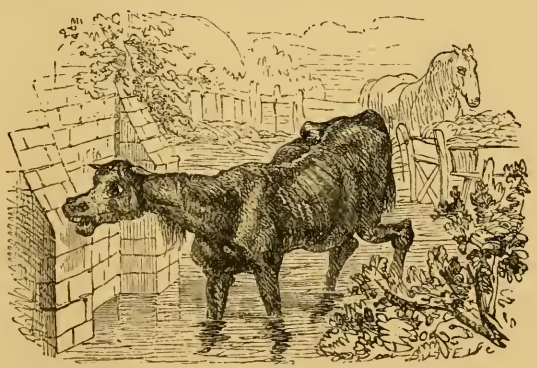
And now, whence is derived the source of this evil? It springs from the ignorance of the age. Is it not, at the present day, a common saying, that "intelligence goes begging, while handicraft finds employment?" Goodness, education, and industry, cannot, at this time, ensure the bread which will support existence. The cunning and the knowingness of the uninformed is much preferred. There is no mystery in the groom's office which might not be acquired in a week. The horse would fare better and be more safe in the custody of a person, who possibly might sympathise with its solitude and appreciate its disposition. A higher class of servants would involve a higher rate of wages. But these might be paid and, notwithstanding, the horse proprietor be, in the long run, an evident gainer. To put the wounds inflicted on the sensibility of a feeling man out of the question, it is a heavy misfortune to look upon three or four valuable horses stretched out in death. Add to this, there are other accidents that

ignorance, without malice, commits, and all of which must be paid for by the master. Then there are the petty frauds and understandings in which cunning delights, and all of which are indulged at the master's cost. On the other hand, there is the certainty, or all but certainty, that intelligence would perform its duty. The horses would thrive better and last longer when confided to proper custody. The losses, attendant upon ignorance, would be avoided, —not to mention the ease of mind secured by confidence in the probity of the person to whom authority is entrusted. What a mockery it is to cry up education and then to shun the educated! A stimulus would be given to the ignorant, when it is recognised that the informed will be alone engaged to fill offices of trust.

CHRONIC GASTRITIS.

This affection is more general than is commonly understood. The horse being unable to vomit, of course the first positive proof of disordered stomach cannot be exhibited. Thus, little attention is generally paid to its digestion, when primarily diseased.

Chronic gastritis is usually said to be provoked by rearing upon



A HORSE WITH CHRONIC GASTRITIS INDULGING ITS MORBID APPETITE.

sour or soft land; but well-bred animals are often subject to the malady. The ailment is frequently first displayed at the period when the services are esteemed most valuable, or between the fifth and sixth years, long after the mode of rearing must have ceased to operate. The symptoms are various, and hardly ever alike. The stomach may affect the nervous system; then its

complications become difficult to disentangle. The affection is mostly declared by an irregularity of bowels and a capriciousness of appetite. The animal starts off violently purging. The looseness stops as suddenly as it commenced. Obstinate costiveness then sets in, and each state can be traced to no obvious reason. The straw or litter may be eaten ravenously, but all the wholesome provender obstinately refused. The dung shows the condition of the appropriating functions; it crumbles upon the slightest force being imposed; it appears to consist of fibres not agglutinated together. Sometimes it is coated with mucus, and always smells abhorrently. A dry cough may be present; the visible membranes are pallid; the mouth feels cool; the breath is tainted; the eyes are sunken; the respiration is catching; the belly is pendulous; the anus is lax and prominent; the coat dry and ragged; while the body quickly becomes emaciated.

The slightest exertion produces a thick and copious sweat. The symptom, however, which is most remarkable, when the cleanly habits natural to the animal are considered, is the peculiarity of the appetite. The rack and manger are generally neglected, but every unnatural or offensive substance, within reach of the extended jaws, is devoured with avidity. Woodwork has largely disappeared. Soil and stones have been removed from the stomachs of creatures destroyed for incurable disease. Either of the substances last-named, however, are usually spared, so long as a morsel of plaster, a portion of mortar or of brick, is within reach. Animals, when in the field, will leave the grass and enter any ditch to gnaw at bricks and mortar. When confined, they will, under the morbid influence of this affection, employ themselves for hours searching for a morsel of either amongst the straw.

The old custom of purging and bleeding for a case of this kind is positively injurious. It is better to administer bitters, alkalies and sedatives—the first, to amend the appetite; the second, to correct the acidity of the morbid secretion; the third, to destroy the uneasy sensation which provokes too many of the symptoms.

Powdered nux vomica .	One scruple.
Carbonate of potash . .	One drachm.
Extract of Belladona .	Half-a-drachm.
Extract of gentian and powdered quassia . .	Of each a sufficiency.

Or—

Strychnia	Half-a-grain.
Bicarbonate of ammonia	One drachm.
Extract of belladonna .	Half-a-drachm.
Sulphate of zinc . . .	Half-a-drachm.
Extract of gentian and powdered quassia . .	Of each a sufficiency.

Give morning and night.

One of the above balls may be given daily. When their benefits seem exhausted, give, instead of a ball, half-an-ounce each of liquor arsenicalis, the same of tincture of ipecacuanha, with one ounce of muriated tincture of iron and of laudanum, in a pint of water. Also, damp the food and sprinkle magnesia freely upon it. Then, as the strength improves, introduce sulphuric ether; one ounce water—one pint, daily.

Before concluding, there remains to point out the cause of this lamentable affection. Ignorance views each part of the body as distinct; it cannot see that the various components are connected, and, in the mass, constitute one whole. Thus, medicine appears to the uninformed as thrown away when internally administered for a skin disease. So it may to such persons appear strange how the air inhaled can disorder the digestion! To those better informed, however, it will only seem a natural consequence, that impure atmosphere, inspired day and night, should impair the body's health. It will, with such people, be recognised as likely that the disorder should break forth when the frame is on the eve of being matured. The cause of indigestion is close and unhealthy stables. What loss will instruct mankind that they cannot enslave life and treat it according to their convenience? Life has its natural rights: these cannot be disregarded—the requirements of breathing creatures must be fulfilled. The ability of the enslaver to use according to his pleasure must not be selfishly regarded, else nature is outraged, and in its deprivation pride learns the impossibility of forcing all things to conform with its inclinations.

BOTS.

No animal which has not been turned out to graze during the summer months can possibly be troubled with these parasites.

Such annoyances form no light argument against the benefits accomplished by that which is in slang phrase termed "*Dr. Green.*" The appearance of the coat and aspect of unthriftiness, after a run at grass, generally declare bots to be present within the body.

Uninformed persons are always desirous to possess some medicine which will destroy bots; they wonder that science lacks invention sufficient to compound such an agent. An anecdote may probably dispel such astonishment.

A patron of the Royal Veterinary College was once conducted by a pupil through the museum belonging to that establishment; the pair at last stood before the preparation of a horse's stomach, eaten through by, and also covered with, bots.

"God bless my soul!" exclaimed the visitor, after the nature of the specimen had been explained. "What a spectacle! What a myriad of tormentors! And have you no medicine to remove such nuisances? Can veterinary science discover nothing capable of destroying those parasites?"

"Why, sir," replied the student, "only look at that preparation. To my knowledge, it has been put up in spirits of wine, and corked air-tight for two years. The creatures must be either very dead or very drunk by this time; yet, as you witness, they hold on. What sort of physic could accomplish more than is already effected by the spirits of wine and close confinement I am at a loss to conjecture!"

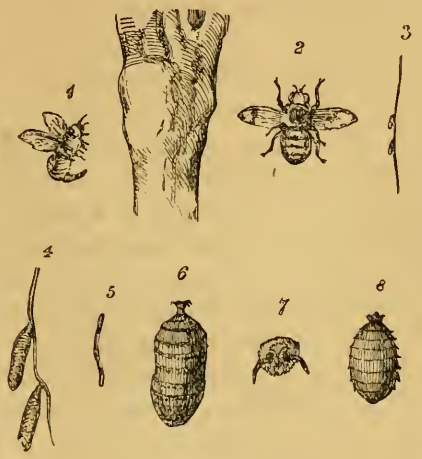
Bots, once within the stomach, must remain there till the following year, when, being matured, their hold of the lining membrane of the viscus will relax, and in the form of a chrysalis they are ejected from the system. No medicine can expedite the transformation. It has hitherto appeared easier to kill the horse than to remove the parasite.

To the investigation of Bracy Clark, Esq., V.S., the public owe all their knowledge of the fly, whence the bot is derived. The common parent, according to the above authority, is the œstrus equi; and the author gladly avails himself of the original description by the above-named talented gentleman.

"ON THE ŒSTRUS EQUI, OR THE STOMACH BOT.

"When the female has been impregnated, and the eggs sufficiently matured, she seeks among the horses a subject for her

purpose, and approaching him on the wing, she carries her body nearly upright in the air, and her tail, which is lengthened for the purpose, curved inwards and upwards. In this way she approaches the part where she designs to deposit the egg, and suspending herself for a few seconds before it, suddenly darts upon it and leaves the egg adhering to the hair: she hardly appears to settle,



THE ŒSTRUS EQUI.

Copied from the Work on Bots, by Bracy Clark, Esq.

1. The female fly about to deposit an egg.
2. The male fly.
3. The egg, its natural size.
4. The egg, magnified.
5. The newly-hatched bot.
6. The bot full-grown.
7. The head of a bot magnified.
8. The chrysalis.

but merely touches the hair with the egg held out on the projected point of the abdomen. The egg is made to adhere by means of a glutinous liquor secreted with it. She then leaves the horse at a small distance, and prepares a second egg, and, poising herself before the part, deposits it in the same way. The liquor dries, and the egg becomes firmly glued to the hair: this is repeated by these flies till four or five hundred eggs are sometimes placed on one horse.

"The skin of the horse is usually thrown into a tremulous motion on the touch of this insect, which merely arises from the very great irritability of the skin and cutaneous muscles at this season of the year, occasioned by the heat and continual teasing of

the flies, till at length these muscles appear to act involuntarily on the slightest touch of any body whatever.

"The inside of the knee is the part on which these flies are most fond of depositing their eggs, and next to this on the side and back part of the shoulder, and less frequently on the extreme ends of the hairs of the mane. But it is a fact worthy of attention that the fly does not place them promiscuously about the body, but constantly on those parts which are most liable to be licked with the tongue; and the *ova*, therefore, are always scrupulously placed within its reach.

"The eggs thus deposited I at first supposed were loosened from the hairs by the moisture of the tongue, aided by its roughness, and were conveyed to the stomach, where they were hatched; but on more minute search I do not find this to be the case, or at least only by accident; for when they have remained on the hairs four or five days, they become ripe, after which time the slightest application of warmth and moisture is sufficient to bring forth in an instant the latent *larva*. At this time, if the tongue of the horse touches the egg, its *operculum* is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is from thence conveyed with the food to the stomach.

"At its first hatching it is, as we have observed, a small active worm, long in proportion to its thickness, but as its growth advances it becomes proportionably thicker and broader, and beset with bristles.

"They are very frequent in horses that have been at grass, and are in general found adhering to the white insensible tissue or coat of the stomach.

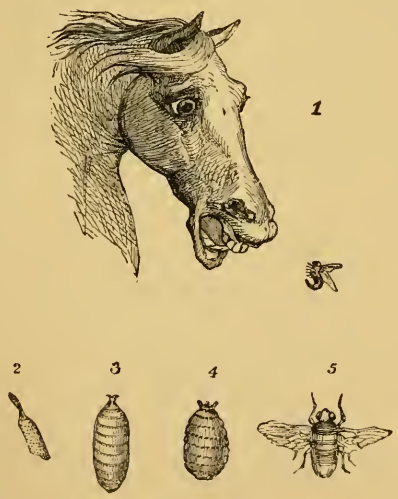
"They usually hang in dense clusters to this white cuticular lining of the stomach, and maintain their hold by means of two dark brown hooks, between which a longitudinal slit or fissure is seen, which is the mouth of the larva. When removed from the stomach by the fingers by a sudden jerk, so as not to injure them, they will, if fresh and healthy, attach themselves to any loose membrane, and even to the skin of the hand. For this purpose they sheath or draw back the hooks almost entirely within the skin, till the two points come close to each other; they then present them to the membrane, and keeping them parallel till it is

pierced through, they expand them in a lateral direction, and afterwards, by bringing the points downwards towards themselves, they include a sufficient piece of the membrane, to remain firmly fixed for any length of time as at anchor, without requiring any further exertion.

"These bots, as is also the case with two or three other species, pass the autumn, winter and spring months in the stomach, and arrive about the commencement or middle of the summer at their full growth, requiring a twelvemonth fully to complete their structure."

"ON THE ŒSTRUS HÆMORRHOIDALIS, OR FUNDAMENT BOT.

"The part chosen by this insect for this purpose is the lips of the horse, which is very distressing to the animal from the exces-



THE ŒSTRUS HÆMORRHOIDALIS.

Copied from the work by Bracy Clark, Esq.

1 The female fly about to deposit an egg.
2. The egg, magnified.
3. The bot.
4. The chrysalis.
5. The male fly.

sive titillation it occasions; for he immediately after rubs his mouth against the ground, his fore-legs, or sometimes against a tree, with great emotion, till at length finding this mode of defence insufficient, enraged he quits the spot, and endeavours

to avoid it by galloping away to a distant part of the field; and if the fly still continues to follow and tease him, his last resource is in the water, where the œstrus never is observed to pursue him. These flies appear sometimes to hide themselves in the grass, and as the horse stoops to graze they dart on the mouth or lips, and are always observed to poise themselves during a few seconds in the air, while the egg is preparing on the extended point of the abdomen.

"When several of these flies are confined in a close place they have a particularly strong, musty smell; and I have observed both sheep and horses, when teased by them, to look into the grass and smell to it very anxiously; and if they by these means discover the fly, they immediately turn aside and hasten to a distant part of the field.

"I once saw in a meadow or field upon the cliffs at Margate a fly of this sort teasing a horse that was confined to a small space by a spike stuck in the ground, to which a cord was tied. He could not get away from its attack, and became quite furious; for in kicking at the fly with his fore-foot, which he did vehemently, he often struck the bone of the lower jaw, creating excessive pain, for in that direction, while grazing, the fly comes to the beard of the lower lip.

"The eggs of this species are difficult to be seen upon the horse's skin or beard, owing to the agitation of the beast, and from the colour of the egg being dark like that of the skin of the horse. The animal has been generally too impatient while undergoing this operation for to let me examine them very well. I ascertained, however, its form by pressing one of these eggs from the abdomen.

"The larva or grub of this species inhabits the stomach as the former, generally adhering to the white lining, and is disposed promiscuously in dense clusters, after the same manner; they may, however, be distinguished from them by being in general smaller, and longer in proportion to their bulk.

"The larva of this species may be obtained from almost any horse that has been much the preceding year at grass, and exposed to these flies, and will be found during the summer months sticking more or less within the verge or opening of the anus, adhering to its soft lining, and producing considerable irritation and uneasiness. Indeed, I once well remember being on a tour of pleasure

in the Isle of Wight, and experiencing much annoyance from these larvæ. The little horse I had hired for the journey became so lazy and unwilling to go on, and moved so awkwardly, that I could not keep pace with my companion, and I was at a loss how to proceed; but on casually taking up the tail, I discovered three or four of these insects hanging to the rectum, and their removal instantly proved a cure."

For more ample particulars the reader is referred to the book itself, which is entitled, *An Essay on Bots in the Horse and other Animals.* It will, in the pages of the original work, be seen that Mr. Clark more than suspected the existence of other species of the same family; but, as no positive knowledge has yet been gained, we must await patiently the inquiries of those to whom this branch of science belongs.

However, the writer must dissent to Mr. Clark's conclusion, that "bots are harmless, if not beneficial." How far does such a supposition agree with the perforated stomach preserved at the Royal Veterinary College? How far does it accord with the ragged coat and unthrifty aspect by which the presence of the parasites is ascertained? How, when crediting such a conjecture, are we to account for the horror exhibited by the horse at the approach of the fly; and how can we interpret Mr. Clark's experience in the Isle of Wight?

Bots are known to be injurious; healthy bodies are seldom troubled with parasites; but, at the same time, bots do not create so much harm in this country as they do in warmer climates. Some years back the reviser was informed by Mr. Gamgee, senior, a most able and observant veterinarian, that in Italy bots played great havoc with horses; they were unable to train animals suffering with them, and could never even get them into any kind of condition until after these parasites had been evacuated in the spring. A winter's work was lost. Such being the case, we can understand that in whatever clime the horse, the subject of bots, is in, it is to say the least, in a less favourable position than the one whose stomach is free from them. In England horses have come under my notice in bad condition, and almost anæmic, caused by the presence of bots; but in the colder climes bots do not as a rule occur in such numbers, neither do they attain so great a size as they do in southern Europe, and this may in some way account for the fact

that in Great Britain horses are not so badly affected with bots as they are in the sunny South. No medicine will force these creatures from their grasp upon the stomach, therefore any treatment is useless. Give plenty of nourishing food, have patience, and await the period when the obnoxious parasite surrenders his stomachic citadel.

CHRONIC HEPATITIS.

Chronic hepatitis is peculiar to maturity. Brewers' horses—huge animals, fattened upon refuse of the mash-tub, and which are paraded, in all the pride of obesity, drawing one small cask over the stones of London—are often attacked by this malady. All horses which consume much provender, without absolute regard to work, are exposed to it. Gentlemen's carriage-horses are very liable to it. A private vehicle is started, and at first much used; but after a time it is equally neglected. The individual does not want the carriage to-day, when the coachman comes round "for orders." Neither is it required on the next occasion. Often a week passes without the fashionable plaything being uncovered. The animals, during that time, depend on the groom for exercise. The coachman may be fond of his horses, and, in his ignorance, may think they cannot have too much rest, or himself too little work. Let the master neglect his duty, and the servant soon follows the example.

The word "duty" was employed in the last sentence. It is of an unpleasant signification, and was used in its harshest sense. Kings owe a duty to their subjects; the rich owe a duty to the poor. All authority has some obligation connected with it. There is nothing like perfect freedom in this world of dependence. Man is the king over living things. He may claim his rights, but he at the same time must adopt the weight of his office: he cannot assume the one and discard the other. A monarch is invested with dominion and authority over men; but the stability of the throne is dependent upon the righteousness of the ruler. If he who wears the crown abuses his trust, he may possess "a right divine," but he is speedily without subjects. So, if man is unjust to the creatures over which he is placed, nature snatches them from his grasp; and he may be invested with every power, but he soon wants animals upon which to exercise it.

View the matter in another light, as an affair only of worldly prudence. Knives, formed of the hardest steel, if purchased and put away, in a short time are worthless, because of rust. A house wears faster when untenanted than when properly inhabited.

A horse cannot remain for days in the stable and retain its condition. The carriage proprietor has not only to find food, but he is equally bound to support the health of his animals, or the service for which he bargained will be rudely terminated. Too many do not think of this. Too many take out the carriage to-day, only because it accords with their convenience. All however, complain of the uncertainty which appertains to horse-flesh. The frame of the horse is stronger than machinery; but it cannot resist the wilfulness of human misrule. Let that man, whose stable troubles him, question his own conduct. Let him examine the house in which he has thrust life. Let him see to the servants he has engaged, and to the food for which he pays; and, after all, let him inquire into his own behaviour: the error will be found, not in the creatures over which he exercises dominion, but in those who are invested with authority.

If people will start carriages, the vehicle must be taken out every day, let the weather freeze, rain, or shine. The hard earth of sunshine is frequently more injurious to the feet than either cold or wet are to the body. The lady, when out visiting, has more than her own pleasure to consult; for all horses fed on the best and underworked, or retained standing long before the street door, are exposed to chronic hepatitis. The gentlemen's delight is almost as liable as the brewer's pride. Even moderate food and too little work will engender the disease.

The primary symptoms are not well marked, and do not, generally, attract attention. The animal is dull and averse to move. It appears to have imbibed a fondness for the inactivity to which it has been accustomed. The appetite is either nice, altogether lost, or unscrupulously ravenous; the bowels are constipated; the dung is black, and coated with bilious-looking mucus; it is friable, and imperfectly digested. If a white paper be pressed upon it, a greenish yellow stain is imparted. The urine is scanty, and commonly highly coloured; while the pulse

has a heavy beat, as though treacle, instead of blood, circulated within the artery. In the early stage, administer for two or three days a ball containing two drachms of aloes and five grains of calomel, and feed on sloppy food. Keep the horse in a warm and well-ventilated loose box.

The signs which indicate a confirmation of the disorder are:— The mouth feels cold; the nasal membranes are unnaturally pallid; the whites of the eyes are ghastly, displaying a yellow tinge; sometimes the horse looks at the right side; usually, it lies upon the left ribs, but never for any long time; tenderness may be exhibited, if the right side be pressed upon. However, the last symptom is rarely present, and lameness in either fore leg is seldom witnessed.

The disease is, for the most part, obscure, and is best recognised when medicine has become powerless. If early detected, a limited, but sufficient supply of nutritious food; plenty of, but not exhausting labour, with a long course of iodine in alternative doses, are calculated to work some beneficial change.

Iodide of potassium . .	Two ounces.
Liquor potassæ	One quart.

Mix, and give two table-spoonfuls night and morning, in a pint of water.

Commonly, however, bleeding from the liver is the earliest recognised indication of disease. Then the horse, with depressed head, is found standing before untouched food; often it staggers; sometimes it supports itself against the partition to the stall; it always maintains the erect position with extreme difficulty; the pupil of the eyes are enlarged; if the hand be moved before the sight, the lid does not close; the vision is lost; the pupils are much dilated; the breath, denoting weakness, is short and catching; the jaw is pulseless, and the heart flutters; the visible membranes are deathly; and the bilious nature of the disorder is, in these last parts, apparent. Should the head, only for a minute, be raised, the animal threatens to fall.

The first attack is seldom fatal, and possibly might, by proper usage, be recovered from. The bleeding, then, is from the substance of the gland, and does not generally burst Glisson's capsule,

or the first and fibrous covering of the liver. Glisson's capsule is, however, by the pressure of fluid, bulged out. The hæmorrhage stretches the peritoneum, which is the second or last envelope, and nature, striving to repair the injury, causes the serous investment to inflame—to become white, opaque, considerably thicker, and altogether stronger than in its normal condition.

There may be an indefinite number of attacks; or the horse, possibly, may succumb to the first assault. Commonly, there

THE HEAD OF A HORSE SUFFERING INTERNAL HÆMORRHAGE.

THE TEST FOR HÆMORRHAGE FROM THE LIVER.

are several fits of the same character. Treatment is generally adopted. A dose of aloes is given, though with what intention the author is not aware. Quiet is enjoined; and styptics, as sugar of lead, alum, etc., are administered; and the horse commonly, under such treatment, seems to recover.

It is, however, difficult to change a fixed habit, or to perceive the reason for an alteration after all danger has disappeared. The gentleman again indulges his inclinations. The coachman, to keep up his horse's flesh, fills the manger; the master very rarely orders the carriage—now he can ride, walking is preferred for his own exercise. Soon, a second fit takes place; this time Glisson's capsule usually yields; but the thickened peritoneum, although pushed further out, still resists, and now remains the single stay between human perversity and certain death.

With recovery, the former custom is again resumed. The man chooses to think a sick horse must require support; the master pleases to imagine rest must be beneficial to an animal which has

been seriously ill. Another fit ensues; no one is much alarmed this time. The people have become accustomed to the sort of thing; men soon grow used to other's agony. However, something is now present which has not been witnessed before. That circumstance rather disturbs the reigning equanimity; the horse is evidently much disposed to quietude, but some hidden cause excites it; it rolls, flings itself down, struggles up again, paws with the fore feet, kicks with the hind legs at the belly, and breathes with much more difficulty than formerly.

Often it lies upon the back for some minutes; the result, when such symptoms are observed, generally is invariable. After death, the abdomen is opened. The cavity is full of black blood, which, commonly, does not coagulate; though, should death occur upon the first attack, dark clots may be found among the intestines.

The treatment depends very much upon circumstances in the early stage before great debility has set in. Administer a purgative calculated to clear out the liver and thus lessen its bulk; but such medicine must be given with discretion and under good veterinary advice. Afterwards, give the mixture above recommended, allow plenty of exercise, and when at home attend well to the patient's comforts, and feed not too largely upon a nutritious diet. Stint rather than overfeed.

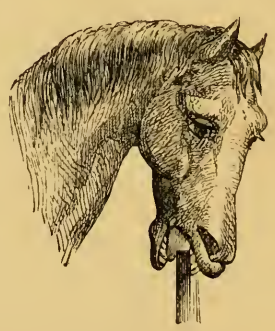
CRIB-BITING.

Cribbing is very common among horses which have been long inhabitants of the stable; the many hours of stagnation the domesticated horse is doomed to pass may induce the animal readily to seize upon any solitary pastime. Or, the perpetual consumption of oats and hay may disarrange the digestion, which, experience teaches, is in ourselves much benefited by a moderate change of diet. Or, the constant inhalation of close and impure air, such as will taint the clothes of the groom who is much exposed to it, may disorder that part of the body, which is the most sympathetic of the entire frame.

Adopt which of these theories the reader may be inclined to, all of them can be brought to bear upon the horse so affected. That cribbing is a habit, is seemingly proved by the young horse,

stalled next to an old cribber, soon acquiring the custom. That cribbing is provoked by idleness, appears to be in some measure confirmed by the horse never exhibiting the peculiarity before it has been handled and become an occupant of the stable. That it arises from acrimony, induced by the food, is apparently shown by the colt, while at grass, never displaying the symptom. That it will be witnessed in the old horse, when turned out for a month's run at grass, establishes nothing. The temporary visitor to the field may often be seen galloping towards some gate, which, having reached, the horse there commences a long game at crib-biting. This circumstance can settle nothing, except that the digestion is chronically deranged—the stomach, when thus affected, being peculiarly retentive of its morbid condition.

Crib-biting consists in resting the upper incisor teeth against any solid or firm substance. A fixed point is thus gained, and, after much effort, a small portion of gas is eructated. The perpetual emission of heated air is, in man, one of the symptoms attendant on indigestion; and the act in the horse, appears to be impelled by something stronger than habit, since the animal will leave the most tempting provender for its indulgence.



A HORSE IN THE ACT OF CRIB-BITING.

The premonitory symptoms, moreover, seem to declare heartburn to be the cause of this much-dreaded indulgence. The custom is always preceded by licking of the manger. If on that there should be iron, or should any part be cooler than the rest, to that particular spot attention will be paid. The licking of cold substances is a symptom of disordered stomach with other dumb creatures. It is prominently displayed by the dog when the viscus is inflamed. But crib-biting may be prevented, if attacked during the premonitory stage. Any substance, which acts as a stimulant to the stomach, is said to be beneficial. Salt is known as an almost necessary condiment, aiding the healthfulness of human food. The deprivation of salt was an old criminal punishment among the Dutch; and a lump of rock-salt, placed in

the manger, will often enable the horse's digestion to recover its lost tone.

Crib-biting has, in submission to general opinion, been alluded to as a habit learnt within the stable. But, may not that which man designates a habit in a dumb creature, be no more than the influence of one atmosphere acting similarly on two bodies, both caged in the same stable? The air is much more than inhaled. A large quantity is swallowed with the saliva. No slight amount is deglutated with the masticated food. The water is generally kept in the stable some hours before the horses are permitted to imbibe it. Water has a large affinity for atmosphere. Air, therefore, enters largely into the body, besides being continually absorbed by the blood during respiration. And moreover, is it not strange that all horses, when indulging an imitative faculty, should always precede the display by the same licking of the manger, which assuredly is not learnt, because that stage has past before the young horse is placed near the one it is supposed to imitate? Is it not also surprising that applying the tongue to cool substances should, in other domesticated but dumb creatures, be a symptom of derangement of the stomach? Observation and evidence both go to prove that cribbing is caused by some affection of the stomach, although when once this habit has been acquired it is seldom if ever given up during the life of the animal. The existence of both in the stomach and the accumulation of the gases disengaged from food have been named the culprits. Cribbing seems to be an attempt to eructate, but this the horse cannot do; neither can he vomit, unless the stomach becomes ruptured, when he does so with great violence. The habit can be prevented by placing the horse in a loose box within four plain walls, without manger or racks, and allowing him only a movable tub to feed from. If he attempts to crib on such tub it will move from his grip, and he will thus be unable to exert that pressure upon it which is necessary to the action constituting cribbing; and in a few hours after such stabular arrangement the habit will be given up, because impossible of performance.

When the horse cribs, the manger is not bitten. The incisors are merely placed against the wood-work, and, from this fixed point, the animal strains backward the body; thereby the muscles of the neck are the more readily excited, and a small portion of

air, accompanied by a slight sound, is forced up a canal which does not of itself favour regurgitation. When the inability to vomit is considered, the necessity of some such stratagem, to relieve the stomach of its burning acidity, must at once be admitted. We are still further reconciled to the necessity which prompts the action when the case afforded to human dyspeptic subjects, by the expulsion of "the wind," is properly regarded.

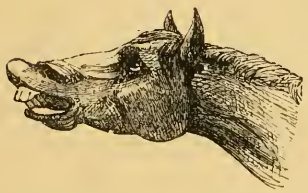
To relieve crib-biting, first attend to the atmosphere of the stables; render that pure by ample ventilation. Place a lump of rock-salt in the manger; should that not effect a cure, add to it a large piece of chalk; should these be unavailing, always damp the food, and, at each time of feeding, sprinkle magnesia upon it, and mingle a large handful of ground oak-bark with each feed of corn. Should none of these measures prove beneficial, treat the case as one of *chronic indigestion or gastritis.*

CHAPTER VIII.

THE ABDOMEN—ITS ACCIDENTS AND ITS DISEASES.

ENTERITIS.

The nose turned forcibly upward, in horses, is only expressive of general abdominal disease. It is frequently exhibited when no disturbance calling for treatment is known to be present, or can be subsequently observed. Still, because it is sometimes the earliest warning of intestinal disorder, all horses displaying such a peculiarity should receive pointed attention.



THE NOSE STRAINED VIOLENTLY UPWARD IS A GENERAL SYMPTOM OF ABDOMINAL IRRITATION.

Enteritis is a fearful disease, creating the greatest possible agony. Aged horses are specially exposed to this scourge, which can rage with ungovernable fury from the commencement, and consume the life in eight hours. Its causes, unfortunately, are in a great measure purely conjectural—such as drinking cold water, etc., etc.

These incentives are formerly recounted in books, but surely something is wanted to complete the catalogue. If all the animals exposed to the operation of such provocatives were to have enteritis, two-thirds of the horses inhabiting Great Britain would be dead by to-morrow morning. The principal thing, therefore, is the predisposition; incline towards a particular malady, and any triviality may start up the disease; yet this predisposition we, at present, are too ignorant to recognise.

A severe fit of colic, long continued, may end in enteritis. This is well known; yet it was not the colic which induced enteritis, but the real cause was that which originated the first affection.

The predisposition must be present before the bowels would exhibit that inflammation into which the colic merged; the injudicious and cruel treatment most horses receive from those to whose service the life is devoted may probably be accused as the root of all these evils: disease is the loudest proof that the life is stinted in some essential particular. The same food is placed before all horses. One animal will, however, purge upon exertion; labour, on the other hand, may constipate the fellow-occupant of the same stable. When the same effect has produced such opposite causes, all the bodies cannot be alike. An old proverb asserts, "That which is one man's food is another man's poison." The diet which supports one animal in health may loosen or constringe its companion; yet we are too ignorant to practically use such distinctions.

Again, there is no practice more general than to load the rack and pile the manger after any uncommon toil has been endured. The practice may originate in the best intentions, but no intention can convert that which is evil into a positive good. The wretched animal is tempted to cram the stomach when excessive labour has weakened the vital functions. Horses which are brought home late at night do not usually receive much notice; the grooms are sleepy and eager for their beds. The dressing of the animal, however much such attention might conduce to health, is consequently left to the following morning. Rapid motion quickens the circulation; the blood is sent to the skin, and copious perspiration is the result. However warm the stable may be, warmth only promotes evaporation; cold of the lowest degree results from evaporation. The consequence is, the body of the quadruped speedily shivers; the blood is repelled to the internal organs; the bowels are prepared for inflammation, and thus enteritis often follows upon the midnight return from a long journey.

Moreover, when the frame is exhausted, rest is far more essential than food; the nourishment then should be very light, and such as can be quickly swallowed. A quart of thick flour or of oatmeal gruel should be first offered after the return. When the cleansing of the animal's body is finished, another quart should be given; these will occupy little time in being put out of sight, and the administration need not interfere with the repose which is desired. The gruel being swallowed, a feed of crushed and scalded oats may

be placed in the manger—no hay should be allowed; the wish is to sustain a debilitated body, not to blow out an idle stomach. Then the creature should, after being fully clothed, be left to itself, and no more nourishment be provided for that night. The danger of introducing substances into a stomach dead to its functions would thus be avoided; nothing likely to irritate or to operate as foreign bodies upon the bowels would be set before the debilitated horse. Besides, the groom would be obliged to remain up for some space, and, as a good servant always finds time hang heavy when without occupation, the animal is more likely to be dressed before the man retires. Moreover, the clothes would prevent the cold which ensues upon unchecked evaporation.

Constipation, if permitted to exist for any period, is always dangerous; hardened fæces are one of the surest causes of enteritis. Musty hay and dusty oats and chaff sometimes find their way to the horse's mouth. This represents an injurious form of diet which should never find a place in the rack or manger of any stable; but when it does, it is certain to make a dangerous impression on the bowels. It is folly to seek for profit from a life, and to stint the nourishment which feeds the strength, or to view cheapness as desirable where the service is unlimited. It is wicked to imprison a living being and then to regard it only in connection with our conveniences; "much care and no spare" is a good stable proverb. The food makes the work. Omnibus masters know this fact; their horses perform hard work and eat of the best, however abominably the generality of these slaves were once lodged. The home of a London horse is mostly a miserable hole; heated only by fermentation, too often undrained, nearly always without sufficient ventilation. The stall of such a building is large enough for the animal to stand in, and not wide enough for the recumbent frame to rest in; the roof is low, and the refuse of the body is piled near the entrance. When will man learn that his interest is best consulted by the proper observances due to vitality in every form? A horse cannot be treated as though it were a jug; it cannot be placed upon a shelf and taken down when required. The functions which nature has placed within a beautiful and exquisitely framed body will, if thus regarded, soon become deranged. Sickness will soon cost more money than health would have required for its sustainment; and, in the end, he who strives to blend the animate

and the inanimate will speedily find himself possessed only of the last description of property.

The predisposing cause may, in most instances, be difficult to discover; but the premonitory symptoms of enteritis are well marked. The animal is dull and heavy. It may not notice aught about it, or it picks at its food; repeated and violent shivering fits usher in the attack. When the above characteristic signs are observed, at once take away all hay and corn. Bandage the legs, which will be cold; clothe the body, and, if already dressed, loosen the surcingle. Litter well the stall, or remove the horse to a loose box; give two or three drinks, one every quarter of an hour, containing sulphuric ether and laudanum, of each, one ounce; water half-a-pint, and observe the animal without disturbing it. These symptoms are, however, generally unseen, because the groom is between the bed-clothes while his charge is suffering.

The primary symptoms of decided enteritis are sometimes mistaken for colic, as the early symptoms of the disease are somewhat similar, in that the animal evinces signs indicative of pains in the intestines. This is unfortunate, for many grooms will attempt cure by administering gin and pepper, and other potions, useless as treatment for enteritis. By so doing, valuable time is lost, and the proper medical measures are deferred until too late to correct the bad effects produced by injurious medicines.

The primary symptom, to an uninformed observer, may simply announce a mild fit of gripes. When the shivering has subsided, the horse rolls, plunges, kicks, etc., as he does in spasmodic colic. The struggles, however, are less abandoned and far more mannered in inflammation of the bowels than in genuine spasm. The pain, moreover, which in enteritis accompanies all movements of the diaphragm, throws the labour of respiration upon the walls of the thorax. The ribs can only partially dilate the lungs; nature endeavours by quickening the motion to supply the deficiency. In colic, the breathing is at first only excited by the exertion; it is deep and full. At the commencement of spasm the mouth is moist, and in

THE TEST FOR ENTERITIS AT THE COMMENCEMENT OF THE ATTACK.

temperature natural; during enteritis the breathing is very short, and the mouth is always hot and dry.

The pulse is disturbed only as colic progresses; in enteritis it is quick, hard, and wiry, before the disorder is fully established. The term "wiry" well represents the kind of pulse which accompanies enteritis. If a thin metallic cord were to strike the finger-ends somewhat gently, and about seventy times in a minute, it would impart the same sensation as is communicated by the beat of the artery during inflammation of the bowels. Besides, by pressure to the abdomen, a marked distinction between the two diseases is noticeable: in colic it seems to ease the anguish; in enteritis, the horse often cannot bear to have it touched. In

THE TEST OF PRESSURE TO THE ABDOMEN FOR ENTERITIS.

abdominal disease so many organs are influenced, that everything becomes, in a vast degree, mystery and confusion. Notwithstanding this, pressure in enteritis never affords relief; sometimes, however, the hand placed upon the belly will elicit the most energetic response. The horse will kick with the hind leg, turn round the head, and violently snap the jaws together. Then, he who applied so rude a test must stand out of the reach of the hind foot, at the same time watching the head. Thus, all danger is readily avoided; because the ears, the eyes, and nostrils of the horse express its intentions before these are carried into effect.

All the tests will, however, not warrant certainty. The heat and dryness of the mouth may proceed from bodily exhaustion; the pulse, though highly suspicious, may merely denote general

disturbance rather than declare the particular locality of a disorder. The peculiarity of the breathing may only express temporary faintness; the resistance to pressure is common to many horses while in health, and the restrained method of the plunges may be consequent upon the absence of any incitement to greater energy. Still, when all are put together, they imply a great deal. Faintness and exhaustion are not to be reconciled with a hard pulse; the heat of the mouth and the resistance to pressure, especially when united to the voluntary restraint imposed upon the motion, certainly warrant a strong inference, and sanction no belief that colic is the sufferer's complaint. Happily, however, there remains a mode of assuring the most hesitating individual. The coat must be pulled off, the shirt-sleeves rolled up, and the arm be well greased or thoroughly soaped. About this there must be no false delicacy; in human surgery and in veterinary practice many things have to be surmounted which do not read well when described in cold print. In this instance, the intention is to relieve a suffering life—the motive will elevate the act. The fingers of the right hand are to be compressed, while the left hand raises the tail; the position is on the left side, as near to the feet as may be possible. Being there, the points of the compressed fingers are brought to bear upon the centre of the anus; gentle and equable pressure is maintained until the resistance of the sphincter muscle is tired out; even then no haste is warranted. Upon the hand penetrating the body, a cavity is entered; here there is generally some dung, the removal of which constitutes what is called "back-raking." In enteritis the excrement is hard, dry, offensive, in small and dark lumps, upon the surface of which lie streaks of white mucus. This being done, the arm must be re-greased or again moistened with water, and the hand gradually advanced to ascertain the temperature of the intestines. If the health be undisturbed, the operator will be conscious only of a genial glow; should inflammation exist, the augmentation of the natural heat will be most decided.

A CERTAIN TEST FOR ENTERITIS.

All is then certainty; no further doubt is justifiable, and no additional symptom need be looked for. The nature of the case is determined; and should it be enteritis, every moment is indeed precious.

Administer at once the following mixture:—

Aconite root, in powder .	Half a drachm.
Sulphuric ether	Three ounces.
Laudanum	Three ounces.
Extract of belladonna . .	One drachm.
(Rubbed down in water)	One pint and a half.

These drinks should be administered as the pain, pulse, and the general appearance seem to demand them; they may be employed every half-hour if requisite. When the pulse is quiet, withdraw the aconite; should the pain subside, remove the belladonna. The ether and laudanum may be diminished as the horse appears to be more comfortable.

Should the symptoms denote a dead, lingering pain in the abdomen after the administration of the eighth drink, procure some strong liquor ammonia. Dilute this with six times its bulk of cold water. Saturate a stout cloth with the dilution; lay the

THE APPLICATION OF AN AMMONIACAL BLISTER IN ENTERITIS.

cloth upon several folds of rug; obtain four resolute men with not very sensitive eyes or noses, and let them hold the cloth close to the animal's abdomen.

The action of the ammonia must be from time to time observed.

It is a most powerful agent. In certain states it can blister in ten minutes; in other conditions it requires half an hour to take that effect. It is very uncertain; but, if held too long, it may dissolve the skin, and leave behind a fearful sore, which will establish a lasting blemish. He who employs it will understand he is using that which must not be abused. The removal of the cloth allows the ammonia to evaporate and, consequently, at any moment, effectually checks all further action.

When all is accomplished, should the progress of the disease be effectually stayed, but the cure not be complete, administer every other hour two drachms of carbonate of ammonia in a pint of thin linseed tea. But stop all the other medicine as soon as the subsidence of the symptoms will permit. The food is now of all importance. Bran mashes and hay tea would act injuriously; thin oatmeal gruel must alone sustain the body for the first day after recovery. On the next day, a feed of boiled roots may be introduced; but not the whole quantity at once—that must be divided into three meals. Then the amount may be doubled, and thus the full bulk of provender be by degrees attained; afterwards, a few crushed and scalded oats may be mixed with the rest at each meal, but it should be some time before hay is permitted to irritate and distend the lately inflamed surfaces.

Enteritis is a fearful disorder; he who has witnessed one death by that terrible malady should have received an awful rebuke. The *post-mortem* examination best describes the violence of the affection. The intestines, generally the large intestines, are black and swollen; often, in colour, they approach to a green. Their structure is destroyed; they tear upon a touch, and are so loaded with inflamed blood that one division of the bowels may form no inconsiderable burthen for a strong man.

The above directions, the intelligent reader will fully comprehend, are not pronounced in any absolute sense. No two cases of any violent disorder are precisely similar; the forms, therefore, prescribed in these pages admit of variations. They are given only as suited to the generality of attacks; they may be lessened or augmented, as circumstances demand, or as discretion dictates. It would be as easy to make a shoe which should fit all feet as to name medicines, or point out the quantities which should be adapted to all maladies.

ACUTE DYSENTERY.

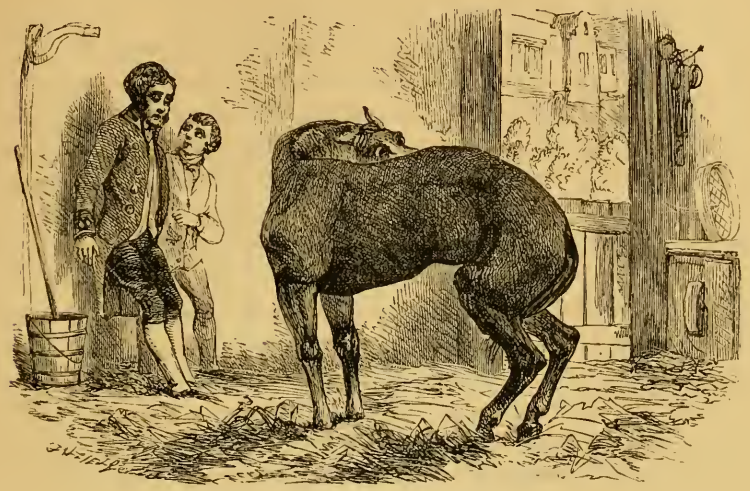
Diarrhœa may be banished from the list of diseases to which horse flesh is liable. Certain animals will purge during work, others will scour upon the slightest change of diet; such peculiarities, however, mostly check themselves—they demand very slight or no remedial treatment. Unlike diarrhœa in the human subject, they never terminate in death; but dysentery is as violent as diarrhœa is mild. The length and size of the intestines renders any disease within them a very serious affair. There are two kinds of dysentery, the acute and the chronic; the acute form of disease will constitute the subject of the present article.

The cause of acute dysentery is always some acrid substance taken into the stomach; generally aloes, combined with some preparation of croton: other substances will, however, induce an inflammatory purgation, which is usually designated super-purgation. Such a result may ensue upon the injudicious use of arsenic, corrosive sublimate, tartar emetic, blue stone, etc., etc. Many of these substances will be eaten if mixed with the corn—the instinct which protects the lives of other animals being destroyed in the horse by ages of domestication. Others may be ignorantly administered with the very best of intention.

The symptoms often are obscure at the commencement; there is abdominal pain; so there is in most intestinal disorders. The agony may readily be mistaken for the pangs attendant on spasmodic colic. On other occasions the suffering may be slight, not even sufficient at first to destroy the appetite. No poison acts upon two bodies in precisely the same manner; violent purgation is generally the first marked sign which makes known the nature of the disorder. The faeces soon become mere discoloured water; the thirst is then excessive; the stench is most offensive; the pulse, from being hard, shortly becomes thick and feeble, and ultimately it is intermittent; the countenance is haggard; the position of the body expresses abdominal pain. Perspirations break forth in patches; tympanitis starts up, and death speedily ensues.

It is of little use to inquire, while the animal is suffering, what has provoked the super-purgation; it is then most desirable, if possible, to remove the effect. The best chance of accomplishing this is by destroying the pain that exhausts the strength, thereby

affording nature the better chance of vanquishing the irritation. Ether, opium, belladonna, chalk, and catechu present the best means



A HORSE SUFFERING FROM DRASTIC POISON.

of doing this. These agents, when combined, support the body, allay the anguish, and check the purgation; blended with thick linseed-tea, which will in some measure supply the mucus lost to the bowels. They, therefore, form a good drink for most occasions:—

Sulphuric ether	One ounce.
Laudanum	Three ounces.
Liquor potassæ	Half-an-ounce.
Powdered chalk	One ounce.
Tincture of catechu	One ounce.
Cold linseed tea	One pint.

Give, throughout the acute stage, every quarter of an hour.

At the same time, cleanse the quarters, plait up the tail, and throw up copious injections of cold linseed-tea. Expect the horse to become greatly prostrated when amendment commences. The entire of the irritating agent must be expelled from the body before improvement can be witnessed. The subsequent recovery is announced by a pause in the symptoms; the disease appears to be stationary; whereas, previously, everything denoted a hastening termination.

That pause is one of suspense, for no one can say what will

follow; sometimes the cessation of agony precedes immediate dissolution; sometimes recovery dates from that event. The animal, upon the slightest change being exhibited, must still be assiduously attended. Care must never cease; and, after recovery is confirmed, the food, for a week, must consist of linseed tea, hay tea, and gruel. On the expiration of the week, a few boiled roots may be added, three of the drinks previously ordered being administered every day. Do not bother about the bowels; no matter should the animal be constipated for a fortnight subsequent to the thorough emptying of acute dysentery. Upon the termination of a fortnight, stop all medicine, and allow some crushed, scalded oats and beans; withdraw some of the slops as the solids advance; but let a full month expire before a drop of cold water or a mouthful of hay are permitted to be swallowed.

To escape the loss of so large a piece of property as a living horse, it is imperative the notion should be abandoned which asserts that, because the horse can swallow most opening medicines with impunity, a strong purgative cannot otherwise than benefit the animal; the deduction is not fairly drawn. But not to follow up too closely so lame a prey, aloes is the general purgative in the stable; it is a drug which should never be entrusted to the hands of the groom. The difference between the necessary and the poisonous dose is too close for the uneducated to comprehend it; more horses have been slaughtered with aloes than have perished from all the other poisons conjoined. Yet, grooms are particularly fond of this medicine; the dangerous drug enters into every ball which is popular in the stable. No matter how opposite the end desired may be—in the groom's opinion, aloes must produce it. Like the majority of the uneducated, the stableman rejoices in a strong purge. Tenesmus is his delight; he loves to see sixteen or eighteen full motions, and then he cannot comprehend why the horse is weak, since the physic passed beautifully through him!

Of all persons living, grooms generally are the most prejudiced and the worst informed. All advice is disregarded. Should the master speak, the groom shakes his head, and after the lecture is ended, inquires of himself, "What the old buffer can know about it?" Here is the curse of horses! Gentlemen transfer them to the custody of the uneducated. The groom is accepted as an authority; the master asks for, and is mostly governed by, the

opinion of an inferior. No other servant possesses such a power; no domestic more abuses his position; the carriage and the harness maker, the corn merchant and the veterinary surgeon all pay this person five per cent. upon the employer's bills; nothing comes on to the premises but the man claims a profit from it; nothing leaves the stable but is regarded as his perquisite. He thus, while occupying a situation of trust, has an absolute interest in the extravagance of the expenditure. Wear and tear of the articles over which he watches bring to him actual emolument; his interest and his duty are at war; and when a weak person has to decide the battle it is easy to understand on which part the victory will be declared.

CHRONIC DYSENTERY.

This affliction is not so common amongst horses as it is with cattle; neither is it so frequent at the present day as it appears to have formerly been. Once it was termed "molten grease," from an unfounded notion that liquid fat was discharged with the fæces. Now it is known that what our ancestors took for grease is no more than the mucus which is expelled during every form of severe intestinal irritation.

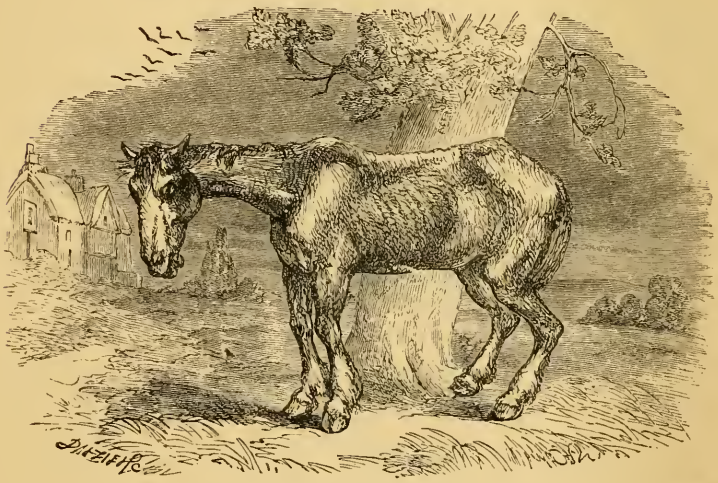
The cause of chronic dysentery among horses is not well understood. It is said to follow diarrhœa; but such an explanation seems to confound the commencement of one disorder with the establishment of another disease. Horses having chronic dysentery are generally old animals, which are subject to the will of a very poor or a very penurious man. They are badly kept, and may have to grub a scanty living from lanes and hedgerows; also, they are goaded to hard work, upon watery food and sour grass. In such cases, disturbance of the bowels should be early attended to. The food should be immediately changed. Good sound oats and beans should be freely given, while the following drink is administered thrice daily:—

Crude opium	Half-an-ounce.
Liquor potassæ	One ounce.
Chalk	One ounce.
Tincture of allspice . .	One ounce.
Alum	Half-an-ounce

Mix, with a quart of good ale, stir briskly, and give.

Should the primary symptom not be attended to, profuse purgation may ensue without excitement, but always will happen upon any exertion, or the drinking of cold water. Violent straining often follows; the belly enlarges; the flesh wastes; the bones protrude; the skin is hidebound; the visible mucous membranes become pallid; weakness increases; perspiration often bursts forth without occasion; the horse will stand still for hours, not grazing nor seemingly being conscious that grass was within its reach.

At length, a living skeleton alone remains of that which was a



A HORSE SUFFERING UNDER CHRONIC DYSENTERY.

horse. The eyes have a sleepy, sad, and pathetic expression; the head is often turned slowly towards the flanks; the sight remains fixed for some moments upon the seat of pain; the horse stands on one spot, or only changes it when the bowels are about to act; colic at length sets in, though frequently it is present earlier; and the wretched quadruped then fades speedily away.

It is a general practice to turn animals, suffering from chronic dysentery, upon some village common. The horse is put there, with scanty food and no shelter, under a plea of humanity, or, "to give the old 'oss a last chance." There can be no feeling in placing

a diseased animal far away from sight or help, where it must pine, shiver and starve, in a dreary solitude.

Supposing the affected life to be claimed by a generous master, either of the following drinks may be given, thrice daily:—

Sulphuric ether	One ounce.
Laudanum	Three ounces.
Liquor potassæ	Half-an-ounce.
Powdered chalk	One ounce.
Tincture of catechu	One ounce.
Cold linseed tea, ...	One pint.

Chloroform	Half-an-ounce.
Extract of belladona . . .	Half-a-drachm.
Carbonate of ammonia . . .	One drachm.
Powdered camphor	Half-a-drachm.
Tincture of oak bark . . .	One ounce.
Cold linseed tea	One pint.

The above drinks may be changed, as either appears to have ceased to operate. The food should be of the best and lightest description. Boiled roots, boiled linseed, boiled rice, crushed and boiled malt, etc., etc.: no hay. The body should be frequently dressed, and always clothed. A good bed ought to be allowed. The lodging must be well drained and roomy.

Yet, after all this trouble, a speedy cure is not to be expected; and rarely does an old horse, should it recover, prove highly useful; and it is unfortunate to know that such disablement is brought about in nine cases out of ten by excessive labour, filthy lodging, and innutritious diet. Each of these causes increases as the age advances.

Prior to its domestication the horse might not have found on every spot an abundance of excellent fodder; but then it was at liberty to seek a better fare in another place. Man has taken away all power of choice; he forces the creature to toil, and obliges it to eat only that which parsimony may afford to throw before it. When so vast and so absolute a power is claimed, it becomes a positive duty to see the mere animal necessities are satisfied: it is cruel folly to tax the powers and to stint the body. It is a crime to undertake a trust and then confide the fulfilment of its respon-

sibility to an ignorant inferior. It is a sin to seize on life and to neglect the prisoner you hold in captivity. Where existence is claimed as a property, and animation is forced to wear out being in labour for the master's profit, surely the least obligation the superior could own should be the provision of ample lodging and fitting sustenance. Both are withheld from the aged horse!

ACITES, OR DROPSY OF THE ABDOMEN.

In the horse acute peritonitis is unknown, save as the result of operation; then its fury takes possession of the cavity and generally refuses to yield to medicine. It is different, however, with chronic peritonitis, which, though not a common disorder, is too often encountered to be esteemed a rare disease. It is, when early noticed, tractable; but the earlier symptoms are generally not understood. The first sign is a ragged coat and a tender state of the abdomen; the horse, which was passive previously, now shrinks from the curry-comb, snaps and kicks at him who dresses it. Such actions are viewed as denoting a return of spirit. Intending to encourage the favourite quality of the stable, the flank is violently struck or slapped by the servant; and the indication forced from a dumb animal by agony is by grooms regarded as the proof of reviving animation.

Masters should, in justice to themselves if from no higher motive, visit the stable more frequently than is their custom. The horse is all gentleness and simplicity; a groom only knows less about the animal than a child, for he has acquired notions which induce him to misinterpret plain actions. Every owner of a stable should learn to feel and count the horse's pulse; he should be acquainted with the normal standard and its healthy character; chronic peritonitis might then early be discovered. The pulse under this disease is hard and small, it vibrates about sixty times in a minute. The head is pendulous; the food is oftener spoiled, rather scattered about than eaten; the membranes are pale and the mouth is dry; pressure upon the abdomen elicits a groan, and turning in the stall always calls forth a grunt.

When such symptoms are observed, the food should be small in bulk, but nutritious in quality; no work should be imposed; the medicine should be tonic and alterative:—

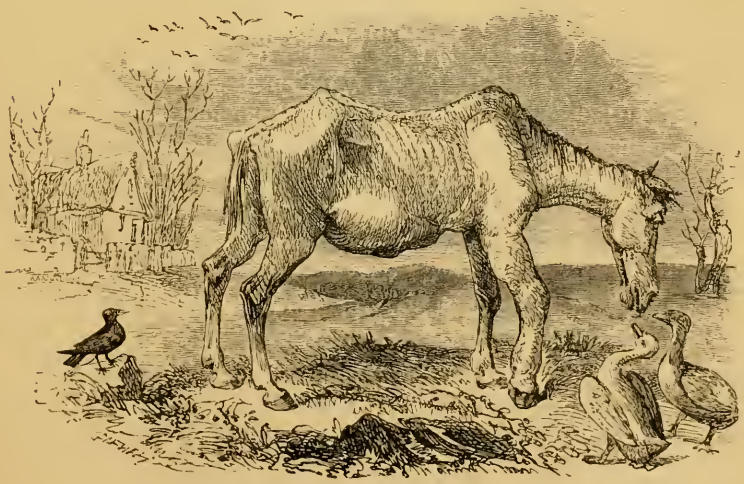
Strychnia	A quarter of a grain, worked gradually up to one grain.
Iodide of iron . . .	Half-a-drachm, worked gradually up to one drachm-and-a-half.
Extract of belladonna .	One scruple.
Extract of gentian . .	A sufficiency.
Powdered quassia . .	A sufficiency.

Make into a ball; give one at night and at morning.

Slight blisters to the abdomen may from time to time act beneficially in preventing dropsy of the abdomen; its existence is usually of an incurable nature.

The symptoms that announce that the serous membrane has effused water into the abdomen are a want of spirit, constant lying down and remaining in one position for a long period, perpetual restlessness, thirst, loss of appetite, thinness, weakness, enlarged abdomen, constipation, and hide-bound.

The enlargement of the belly has something peculiar in it; the swelling lies towards the inferior portion of the abdomen. Near



A HORSE WITH ACITES, OR ABDOMINAL DROPSY.

the loins there is apparently an empty space; if the hand be placed on the enlargement, and another person strikes the belly on the opposite side, a sense of fluctuation can be distinctly felt. If the

horse be thrown upon its back the swelling will, with the change of position, gravitate towards the loins. At length small bags containing fluid depend from the chest and the inferior surface of the belly. Should the disease be suffered to progress, the sheath and one leg generally enlarge; the hair of the mane breaks off, and is easily pulled out. Where once hung the tail now remains little more than the dock with a few scattered hairs. Ultimately purgation starts up, which terminates the suffering.

Of course, after effusion, all treatment is powerless—creatures in the last stage of dropsy presenting sights which the mind shudders to contemplate; objects of this kind are sometimes to be seen on commons in the neighbourhood of London. They are turned out to die miserably, under the plea of humanity; the utmost limit of cruelty is justified or made pleasant by a pretence to sympathy. The poor horse literally starves; were there food to eat, the remaining strength would not serve to collect it. Still, the proprietor is so very humane, he cannot endure to destroy the property he has paid for; the poor animal is therefore thrust forth to cheaply live or to die without trouble to its owner.

INFLUENZA

Rages as an epizootic. It may confine itself to circumscribed spots, but usually takes a line of its own from north to south, being bound to the east and west by an easily recognised boundary, and is caused by waves of air within which some injurious influence or parasitic life is conveyed to the equine system. It may rage throughout the kingdom, or it may be located upon a very circumscribed spot. In a disorder so eccentric it is very difficult to decide the question whether or not it is contagious. It commonly runs through the stable in which it appears, but it does not invariably attack every animal within the building. It may, in a large edifice, first seize the horse nearest the door, then travel to the stall furthest from the entrance; thus, it skips about without regularity, and often spares many individuals.

Any devitalising cause is calculated to produce this affection. Bad drainage and ineffective ventilation, insufficient breathing space, etc., all tend to deplete the equine systems, and render them easy recipients of disease, and of influenza in particular, which is

ushered in by the animal becoming dull, and exhibiting a dislike to move. Local swellings occur, associated with heat and a pain at the joints; the muscular and digestive functions are acutely disordered; and the rapid wasting of flesh demonstrates not only that the absorbents are excited, but that the whole system is deranged.

Youth, or rather the approach of adultism, is the favourite season for the attack, which is most prevalent during the spring-time of the year. There is, however, no period or any age altogether exempt from its influence.

All kinds of treatment have been experimented with. Bleeding, purging, blistering, setoning have all been tried, and each has destroyed more lives than the whole can boast of having saved; experience has, by slow degrees, shown the inutility of active treatment. *Bold* measures, as those plans are termed, which add to another's suffering, commonly end in hydrothorax or water on the chest.

Injection or redness of the conjunctiva, or white of the eye, is a very characteristic sign of this disorder. Whenever seen, associated with weakness, caution should be practised, for it is ten to one that the pestilence is approaching.

The primary symptoms of local and more general congestion are rapidly succeeded by short breath, inflamed membranes, swollen

CONFIRMED INFLUENZA.

lips, dry mouth, enlarged eylids, copious tears, sore throat, tucked up flanks, compressed tail, filled legs, big joints, lameness and hot feet. Auscultation may detect a grating sound at the chest, or a

noise like brickbats falling down stairs at the windpipe: whenever this last peculiarity is audible there is a copious nasal discharge. Sometimes one foot is actually painful, and, notwithstanding the weakness, the leg is held in the air. Purgation has been witnessed, although constipation usually prevails, and the animal generally stands during the continuance of the disorder.

Move the horse slowly to a well-littered, loose box; mind the door does not open to the north or to the east. No food will be eaten; but suspend a pail of well-made gruel within easy reach of the animal's head. Let the gruel be changed, or the receptacle replenished at stated periods, thrice daily.

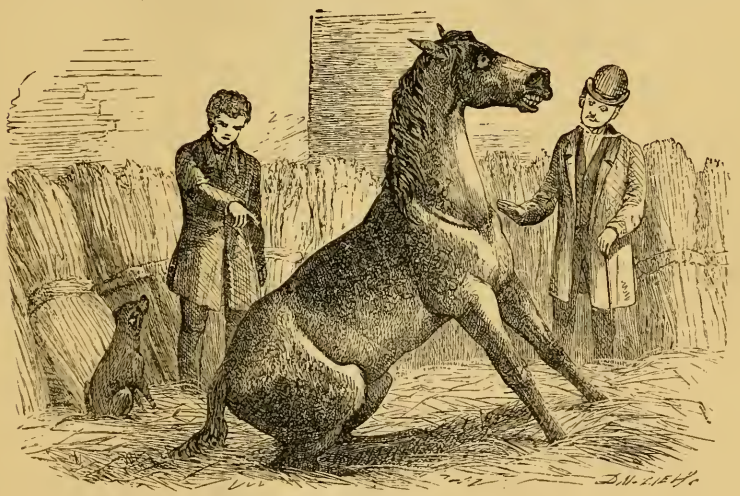
All physic must be administered with great caution, as the system is too devitalised to bear even the slightest exhibition of medicine. In the early stage, as the patient will not eat, give thrice daily, in a quart of gruel, one drachm of carbonate of ammonia, and continue this simple treatment for two or three days, and afterwards, should the symptoms abate, increase the allowance of gruel and mix in it, in addition to the ammonia, half a drachm of cinchona bark. This may be continued until the patient begins to eat. The reviser has little faith in medicines for influenza—good nursing is the most useful remedy. The maladministration of medicine has killed thousands of horses, which a proper system of dietary, due attention to hygienic laws and careful nursing would have prevented.

The very simple treatment prescribed has been the means of curing hundreds of cases which have occurred in the reviser's practice. He therefore confidently recommends it to his readers. When the horse begins to take manger-food start by giving oatmeal gruel, then crushed oats and boiled carrots. Give only a small quantity at a time, just as much as the animal will eat at a meal; do not let any provender be left in the manger to get sour. If you have fed at one o'clock, and find any food left in the manger at four, clear it away and well cleanse out the trough. Keep the horse and the loose box scrupulously clean and, when necessary, use disinfectants. This treatment, if conscientiously carried out, will be attended with beneficial results in effecting cure.

ABDOMINAL INJURIES.

These are of various kinds. They differ materially, but they all provoke inflammation of the vast serous membranes lining the abdominal cavity; and their symptoms are, therefore, too nearly alike to be distinguished from each other. A mere list of such perils must astonish the reader; and his pity will be excited when he learns that such accidents, numerous as they are, generate the most violent agony, ruptured spleen, ruptured intestines, strangulation, intro-susception, impactment, and calculus.

Ruptured diaphragm is attended with a soft cough, and symptoms of broken wind (occasioned by the almost sole employment of

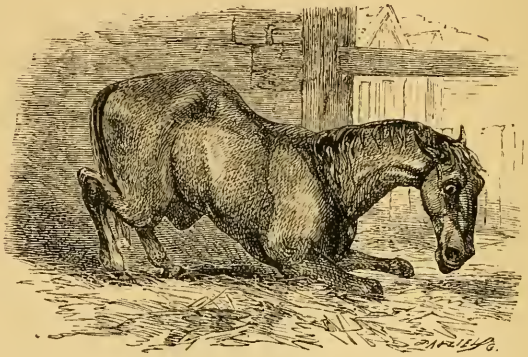


AN UNNATURAL BUT USUAL ATTITUDE, INDICATIVE OF RUPTURE OF THE DIAPHRAGM.

the abdominal muscles) with sitting on the haunches. Still, Professor Spooner, late of the Royal Veterinary College, mentioned in his lectures that an animal, belonging to the Zoological Society, lived two years with a ruptured diaphragm, through which the bowel protruded into the thorax. In the horse such a lesion is speedily fatal.

A position so unnatural as that of sitting on the haunches may denote something very wrong to be present; but though a common sign of this injury, it must not be looked upon as a never failing symptom of it, as animals are known to have assumed it and sub-

sequently to have recovered. The diaphragm, when it yields, generally gives way upon the tendinous portion. Through the opening the peristaltic action soon causes the bowels to obtrude;



A POSITION OFTEN ASSUMED BY THE HORSE SUFFERING FROM ABDOMINAL INJURY.

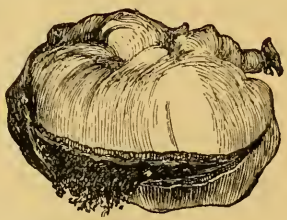
and death is produced by displacement and strangulation of the intestine. The posture, previously delineated, is noticed in other injuries of the abdomen; so is the opposite peculiarity—or the horse remaining upon its chest. The last attitude may not, to most persons, appear so strange, seeing that the creature assumes it

TEST FOR HÆMORRHAGE FROM THE SPLEEN.

whenever it rises or lies down. Then, however, it is only momentary. When it denotes abdominal injury it is comparatively of long continuance. At the same time, the breathing and the countenance bespeak the greatest internal anguish.

Ruptured spleen is the gentlest death of all those which spring from abdominal injury. It has been discovered, after death, of enormous size; but the symptoms, during life, had not led to the expectation of any very serious disorder. Ruptured spleen and ruptured liver are both productive of similar symptoms; both answer to the same tests, and the termination of each is alike.

Ruptured stomach mostly happens with old and enfeebled horses. Night cab-horses are very liable to it; so, also, are animals of heavy draught. The drivers often neglect to take out the nose-bags. The horse's most urgent necessities always yield to man's passing convenience; so the creature has to journey far or to remain out till the empty stomach grows debilitated. It is then taken home and placed before abundance. Elsewhere this folly has been commented upon. It was shown that light food and perfect rest were the best restoratives for an exhausted frame. The drivers, however, refuse to be taught. The horse eats and eats. No contraction of the exhausted stomach warns the animal when to stop. The viscus is crammed. Then digestion endeavours to commence. With rest, the organ recovers some tone. The muscular coat of the sac starts into action, and, encountering opposition, the vital powers exert themselves with the greater energy. The stomach is thus burst by its own inherent force; the largest division of its various structures always being exhibited by the elastic peritoneal covering, the lesser rent being left upon the inelastic mucous lining membrane. Excessive colic, followed by tympanitis, are the only general symptoms which attend ruptured stomach. The history of the case, if it can be obtained, is however a better guide; but there are too often interested motives for distorting the facts. Vomition through the nostrils has been thought to particularise ruptured stomach; but experience has ascertained that vomition may be induced by any lesion which is sufficiently great to cause revulsion of the system.



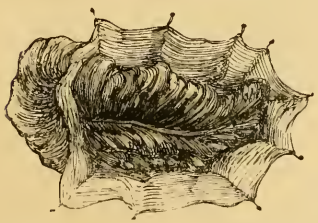
A RUPTURED STOMACH.

Intro-susception is always preceded by colic. The last-named affection causes portions of the bowels to contract. Such contracted intestines become small, firm, and stiff. They are, while in that

condition, by the peristaltic action, readily pushed up other portions of the canal, which are of the natural size. The entrance of the contracted bowel acts upon the healthy tube, as it were a foreign substance. Contractibility is excited. The displaced and intruding bowel is grasped as by a vice, and the accident is of that kind which provokes its own continuance. Cure is hopeless while consciousness remains; the only hope is the administration of chloroform in full and long continued doses; thereby to arrest vitality and chance the release of the imprisoned gut. While intro-susception lasts, all passage is effectually stopped. Inflammation soon commences, and the symptoms of outrageous colic are exhibited.

THE INTESTINE DIVIDED SO AS TO CLEARLY SHOW THE NATURE OF INTRO-SUSCEPTION

Invagination is here used to express the entrance of one entire division of the bowels within another. In this sense it is chiefly witnessed upon the large intestines; whereas intro-susception is mostly present upon the smaller bowels. The mesentery must be ruptured before such an accident can take place; but then the agony attendant upon the previous derangement is so powerful that it is impossible for the hugeness of this lesion to increase the violence of the torture; nor is there any sign by which so sad a catastrophe can be predicated.



THE CŒCUM INVAGINATED WITHIN THE COLON, AND BLACK FROM INTENSE INFLAMMATION.

Before strangulation can possibly occur, the mesentery must be sundered. It almost always happens to a portion of the small intestines. The bowel, freed from its support, soon involves itself with numerous complications; or the rent membrane may twine round a knuckle of the gut.

The above illustration, however, shows one of the simplest forms in which the accident can possibly take place; but no person, however acute, could distinguish between strangulation from rupture of the intestines. The last generally occurs upon the smaller bowels and happens to the interspaces upon the superior portion of the

tube, between the vessels which nourish the digestive canal. The ingesta is, consequently, forced between the layers of the

A KNUCKLE OF INTESTINE STRANGULATED BY THE RUPTURED MESENTERY.

RUPTURE OF THE SMALL INTESTINES.

mesentery. The most intense anguish, inflammation and death, are the consequences.

Calculus or stone may be present, either in the stomach or in the canal. Those in the stomach are of small size; those within the intestines may attain the weight of more than twenty pounds. Those of the stomach are always smooth, as, also, may be those of the bowels. To the intestines, however, there are common three kinds of, or differently composed, calculi: the triple phosphate, or the earthy; one formed of the minute hairs which originally surrounded the kernel of the oat; and another composed of dung, held together by the mucous secretion of the bowel. Any of these calculi may, as the size increases, gradually stretch the intestine; thus forming a living sac, within which the stone abides. While it remains there, the food passes over it and no injury is occasioned. But, by any movement, it is likely to be dislodged and thrown into the healthy channel. There it is firmly grasped with such force as to produce rupture of the intestine, and the hold is only relaxed after inflammation has ended in mortification and in death. The bowels, in truth, are impacted by calculus. The passage is stopped. However different the causes of abdominal injury may appear, they are each generally characterised by the severest possible abdominal pain. This symptom is often so violent that the agony conceals all other indications; or, if any others can be exhibited, they are so

THE SAC FORMED IN THE BOWEL: THIS THE CALCULUS HAS QUITTED, WHILE ANOTHER PORTION OF THE INTESTINE HAS SO FIRMLY GRASPED IT AS TO RUPTURE ITSELF.

partially shown and displayed for so very brief a space as not to permit of their being rightly interpreted.

Of all horses, miller's are the most subject to the accumulation of intestinal calculi. This is owing to the fact that small pieces of the mill stones find their way into the bran, etc., that their horses are fed upon, and are conveyed by such food to the intestines, where they act as so many nuclei around which the phosphate of lime aggregates to form calculi. It is seldom a calculus is without a nucleus or centre fragment, whether it be a nail, a small piece of wood, or some foreign agent that does not act as an incentive to the creation of calculus concretions. This proves how cautious horse-keepers should be in having all dust, grit, etc., well sifted from the provender they are about to feed their horses on. By so doing, the nuclei would have little chance of entering the equine stomach, and the occurrence of calculi would not be so frequent.

Abdominal injuries are, probably, the sources of the greatest agony horse-flesh can endure. To account for the generality of such lesions, it is merely necessary to regard the places in which horses are housed, and the manner in which they are fed. In the owner's estimation a horse seems to be a horse in the same sense as a table is a table. Both objects are necessary to his comfort, to his pride, or to his profit. Neither have higher claims. Both are to be used and to be flung aside. The one is to be cleaned and repaired at the cheapest rate; the other is to be lodged and supported at the lowest cost. When either grows old in his service, each is equally to be discarded. The two things apparently rank in man's estimation as simple chattels, subject to his will and made to please his fancy. That there is a huge life, a breathing sensibility attached to one of these articles; that it delights in its master's pleasure, and, if properly trained, it is capable of sharing its master's emotions, is so preposterous a sentimentality as to be "with scorn rejected."

Nobody speaks of the horse as a creature enjoying man's highest gift—as a *living* animal. Everybody talks about his or her constitution, but no one imagines the horse has a constitution which can be destroyed. All horses are expected to thrive equally. They are regarded as things to be used, and to be sold or packed away when not required. They are obliged to live by man's direction, and are expected to display the highest spirit whenever they are

taken abroad. Should it be astonishing if the framework Nature has so exquisitely balanced occasionally becomes deranged under man's barbarous and selfish sway? Is it cause for legitimate wonder if, under so coarse a rule, disease sometimes assumes strange forms, or attacks parts which are beyond the reach of human science?

WORMS.

Worms are of various kinds; but all, according to the notions of ignorance, announce their presence by particular symptoms. The parasites, when really present, can however cause no more than intestinal irritation, the continuance of which may give rise to several disorders. Chronic indigestion is, by the groom, always recognised as a "wormy condition."

The only certain proof of the existence of such annoyances is visible evidence. Upon suspicion, careful horse-proprietors may administer certain medicine, because some physics only cool the body and cleanse the system. The generality of worm-powders are, however, too potent to be safe. Like all drugs sold as "certain cures" they are so powerful that they frequently do more than remove the disorder which they pretend to eradicate—for they also destroy the animals to which they are administered.

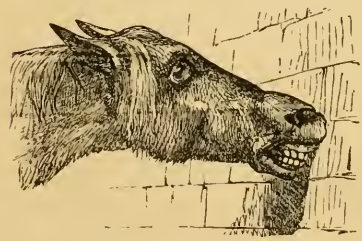
Having premised thus much, the author will now commence to describe the usual form of irritation to which worms of different kinds give rise.

The parasite especially inimical to colts is the tœnia, or tape-worm, which is the result of metamorphosis; its primary generation being noticed in bladder worms, which are usually met with in the brains of other animals. Much in the past has been written on parasitic life; their existence in the intestines has been attributed to the accumulation of filth, to the poor condition of the recipients of these creatures; and many other causes have been mentioned as favourable to the development of intestinal worms. But our knowledge now, although by no means perfect, is more advanced than it was thirty years ago, and the researches in this subject go to prove that worms are a secondary creation, that their primary origin exists usually in a bladder worm. For instance, tape-worm in the dog proceeds from the cœnusus cerebralis of the sheep. This parasite consists of a worm within a bladder, being situated in the

ovine brain, and causes the disease known as "sturdy" among sheep. If this worm be given to the dog it will become a complete individual or tape-worm. Again, if a few segments of the tœnia—for they are all self-generating—be given to the sheep, they will find their way to the brain of this animal, and cause there its primary generation—namely, the cœnusus cerebralis: consequently, it can be understood how involved in mystery these metamorphoses are; yet we can trace many, and therefore the cause and effect being known, can in great measure prevent the recurrence of tapeworm—*i.e.*, by removing the cause. It is well known that parasites are more likely to affect animals in poor condition than those well favoured. Lice will live and thrive on a poor horse, but whilst the same creature is getting fat they die out from his coat, and disappear without even the assistance of any outward application for their removal; and internal worms also are usually found among poor animals, and it would seem that horses in condition are able to withstand the inroads of parasitic life. Although such is the case, parasites will enter the best regulated constitutions, and their presence is most injurious to all conditions.

THE TŒNIA, OR TAPE-WORM.

The development of the young, when afflicted with the above parasite, is checked. Though the appetite, during the time of rearing is more than good, the ribs, nevertheless, are not covered with flesh; the dung is not well comminuted—it is friable, and sometimes partially coated with slime; the anus projects—occasionally it is soiled by adherent strips of tenacious mucus, almost like to membrane; the coat is unhealthy; the breath fœtid; the animal may rub its nose violently against a wall, or remain strain-



IRRITATION CAUSED BY WORMS. THE NOSE RUBBED VIOLENTLY AGAINST A WALL.

ing it upward for a considerable time; the eye becomes unnaturally bright; the colt begins to pick and bite its body, often pulling off hair by the mouthful.

A COLT PICKING THE HAIR FROM ITS LEG BECAUSE OF WORMS.

All this agony and the deprivation of a life depends on the parsimony of man. Women know that the body, during certain times, requires extra nutriment. Thus, delicate ladies, in peculiar states, are accustomed to take "hearty pulls" at porter or at stout. It is very general for physiologists to argue from animals up to man. Why should not the custom be reversed? Why should not veterinary science reason from the human being down to the horse, and thereby instruct the stolid in the necessary requirements of the mare during particular states? "Stint the dam and starve the foal," is certainly a true proverb.

Tœnia is best destroyed by areca nut powder. Powder the nut yourself, and administer a drachm of it in butter wrapped in paper, twice in one week. Sometimes such exhibitions will clear the intestines of this worm. If they do not, repeat the doses. For older animals the quantity of the nut may be doubled.

This probably may kill the worms; but as every link of the tœnia is a distinct animal, of both sexes, and capable of producing itself, the eggs must be numerous. For the destruction of these, nourishing prepared food is essential, such as gruel, scalded oats

etc.; but little or no hay. At the same time, a tonic will be of all service. Take—

Liquor arsenicalis	From one to eight drachms.
Muriated tincture of iron .	From one-and-a-half to twelve drachms.
Extract of belladonna . .	From ten grains to two drachms.
Ale or good stout	Half-a-pint to a quart.

Mix. Give every morning to the animal (strength being proportioned to age), till the coat is glossy.

Lumbrici are more dreadful to contemplate than they appear to be fearful in reality; specimens are not rare which measure eighteen inches. This worm preys upon the weakly, be they old or young. One tœnia will produce immense disturbance, whereas

THE LUMBRICUS, A WORM NOT PECULIAR TO HORSES. ONE-FOURTH OF THE NATURAL SIZE.

AN ASCARIDES, NATURAL SIZE.

A STRONGULUS, NATURAL SIZE.

numbers of the lumbrici will cause little or no effect. Whoever has remarked the dunghill in a knacker's yard has seen it to consist quite as much of lumbrici as of excrement. The parasites may be removed by giving areca nut powder as above indicated, or by administering two drachms of tartarised antimony with a sufficiency of common mass, as a ball, every morning, until the parasites are expelled.

ASCARIDES AND STRONGULI.

These parasites inhabit the large intestines. They produce extraordinary ravages, notwithstanding their insignificant appear-

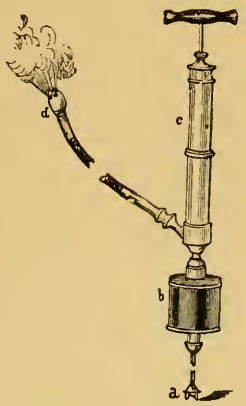
ance. The stronguli will sometimes eat through important structures, but the ascarides are always located within the rectum. Then, most medicines, being deprived of activity, are inoperative before they reach the last locality. For this reason, it is best to commence the treatment with injections of *train* oil. Should these be followed by no result, at the expiration of a week

a. The sole opening by which air can enter. It is placed upon the ground and guarded by a valve; so that air, after having entered, cannot leave the instrument by this opening.

b. The box containing lighted tobacco, through which all air drawn into the instrument must necessarily pass.

c. The pump.

d. The end of the tube through which the fumes are driven.



To load the instrument: unscrew the lid of the box. Fill that with lighted tobacco. Fix on the lid again. Rest the air entrance upon the ground, and move the handle of the pump up and down. By this movement the air is first drawn through the lighted tobacco into the pump, and is then sent through the tube.

THE APPARATUS BY MEANS OF WHICH A TOBACCO SMOKE ENEMA IS ADMINISTERED.

resort to a solution of catechu—one ounce to the quart of water; give that for seven mornings. Upon the eighth, mash the animal, and at night administer a mild physic ball; about four drachms of aloes and one drachm of calomel. Repeat the medicine, if required; but if not, resort at once to the arsenicalis and ale or stout, which was recently recommended.

Tobacco smoke enemas are sometimes efficacious, when all the previous measures are powerless. Frequently the posterior irritation is distressing. It is sometimes so provoking that the horse will thereby be induced to destroy its personal appearance, by rubbing the tail and quarter violently against the wall, or any rough surface within its reach. In such cases the injections of train oil are most likely to prove beneficial; the local itching may be in

A HORSE THAT HAS RUBBED ITSELF VIOLENTLY AGAINST A WALL.

some measure removed by inserting up the anus a portion of the following ointment, night and morning—

Glycerine	Half-an-ounce.
Spermaceti	One ounce.

Melt the last and blend. When nearly cold, add—

Mercurial ointment (strong)	Three drachms.
Powdered camphor . . .	Three drachms.

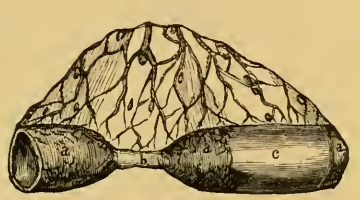
SPASMODIC COLIC. FRET. GRIPES.

Spasmodic colic is an affection which every loiterer about a stable from a postboy to a farrier, imagines he is able to cure. Many attacks, no doubt, would depart of themselves, others might be removed by simple motion. Nevertheless such possible remedies should never be trusted. Neither should gin and pepper, red pepper and peppermint, hot beer and mustard, rubbing the abdomen with a broom stick, kneading the belly violently with a man's knee, or any popular measure be permitted. Such remedies are likely to get rid of colic by causing enteritis. When inflammation of the bowels thus originates it is generally fatal, the strength being exhausted and the powers of nature worn out by the previous disorder,—not to mention the prepossession of the spectators, which prevents the more serious disease from being early recognised. Horses are subject to colic after a long fast. This affection was more common in the past than at the present time, before the late Professor Coleman advised the use of nose-bags, previously to which period horses were in the habit of going from morning until night without food. When they arrived home with empty stomachs they half masticated and half insalivated their food, which, being unprepared for reception into the stomach and thence into the intestines, caused indigestion of so aggravated a nature as to induce colic.

The horse in a state of nature will keep feeding twenty hours out of the twenty-four, and that this is his habit can be easily understood when we remember that his stomach is so small as to be constantly emptying itself, and therefore requiring more frequent replenishment with food. If a horse be kept too long fasting, he will, immediately provender is placed before him, savage it—that is, he may bolt some portion of it, and imperfectly insalivate the other. Now, it is a fact that if food be not sufficiently insalivated,

the gastric juice of the stomach will not act upon it, and consequently one of the first processes of the digestive function is thereby injuriously interfered with. The ingesta has not been properly prepared for the bile and other secretions to act upon, and is therefore unprepared to pass into the intestines with impunity.

Any cause may kindle colic. It is common after fast driving; hence many gentlemen take colic drinks to Epsom races. That affection, which in ladies is designated spasms, in gentlemen is called pain in the bowels, and in children is known as the belly-ache, is, in the horse, colic; and, from the largeness of the animal's intestines, the affection probably provokes more anguish in the quadruped than the same disorder does in the entire human race. Under whatever term it may be recognised, spasmodic colic is never more than partial contraction of the muscular coat of the intestines. The action so compresses a part of the tube as to expel the blood, and render the natural pink of the tissues for some time after the disorder has departed a glistening white. The blood, driven from particular spots, is forced into those parts in which no disease exists. Excess of blood predisposes to inflammation; hence we probably trace the reason why, if spasmodic colic be suffered to continue, the affection is so apt to end in incurable enteritis.



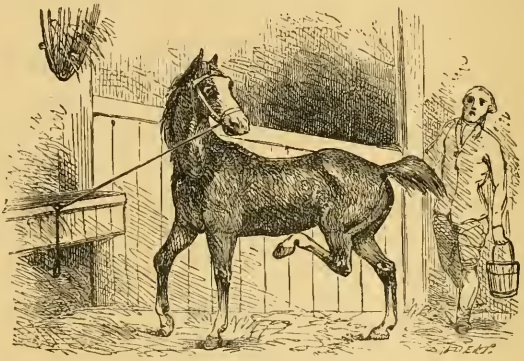
DIAGRAM, EXPLAINING HOW THE BOWELS ARE AFFECTED BY SPASMODIC COLIC.

a a. The healthy intestine rendered much more vascular by the blood being spasmodically driven out of other portions of the tube.
b. A portion of the tube much diminished by the presence of abdominal spasm.
c. The pallid appearance, denoting the place which colic has recently attacked.

Colic most often attacks the small intestines, though the disease is by no means confined to those parts. It first occurs on a limited space; presently it vanishes altogether, and afterwards reappears on some distant portion of the alimentary canal; or, in other words, colic dodges about, its attacks becoming more numerous and the intermissions shorter as the period of its commencement grows more distant. Change of water, change of food, getting wet, fatiguing journeys are all likely to originate it; but perhaps it is most frequently exhibited when no known cause is in operation.

Colic always commences suddenly; it starts into life ready

armed for mischief. The animal may be apparently well and feeding. Without visible cause the head is raised and the occupation ceases. Should the pain last, the hind foot is lifted to strike the belly, and the fore leg begins to scrape the pavement. The groom, who has merely left to procure a pail of water from an adjacent pump, on his return discovers his charge exhibiting evident signs of uneasiness. As the man stares, wondering what can be the



THE FIRST STAGE OF SPASMODIC COLIC.

matter, the horse is pawing, and the nose slowly points to the flank. All then is explained. Fret is the matter, and it would be "*fret*," should the disease prove to be of a very different nature.

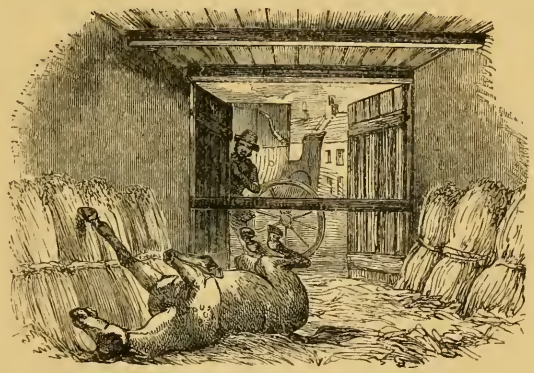
While the horse is being watched, every indication of disturbance may disappear. The countenance tranquillises, and the nose

THE SECOND STAGE OF SPASMODIC COLIC.

is again inserted into the manger. A few minutes elapse, and the pangs are renewed. The second fit may last longer, and be slightly

more severe. Then another, but a more short period of ease follows; thus the visitations will ensue upon spaces of entire exemption from anguish. The recommencement of agony usually is denoted by a disposition to lie down. The animal crouches; next it turns round, as though the intention was to stretch out the limbs; but, suddenly, the erect attitude is assumed—the design lately so nearly executed having been forgotten. Then pawing and striking at the abdomen quickly follow, and while the horse looks towards the flank, a morbid fire is perceptible in the eye.

No relief being afforded, the pains lengthen, while the intervals of tranquillity become shorter. The action grows more fierce and the aspect more wild. The pawing is more brief, but more



THE THIRD STAGE OF SPASMODIC COLIC.

energetic; often, during its continuance, the foot is raised and violently stamped upon the ground. The animal now does not attempt to feed, but stares for a minute at a time, with an inquiring gaze, towards the abdomen. At length, without warning or preparation, the body leaps upward, to fall violently upon the floor. The shock is often fearful; but the animal, in its torment, appears to derive ease from the violence. Being down, it rolls from side to side and kicks about, until one of its feet, touching the wall, enables the horse to poise itself upon the back.

Should relief not be quickly provided, colic soon passes into enteritis. The pulse, from being unchanged, at first, then simply quickened by pain, grows harder and more wiry. The intermissions are lost, and though the anguish may for a space be less, yet, in its continuity, it is more exhausting.

On the appearance of colic, the morbid action ought to be immediately counteracted. Administer six drachms of powdered aloes, two drachms of carbonate of ammonia in a pint of thin gruel. Sulphuric ether and laudanum should be in the possession of every horse proprietor. One pint of each—the two being mixed together, with one ounce of rank oil floating on the top, to prevent evaporation or mistakes—will be perfectly safe in any household. The mixture should, however, be well shaken before it is employed: two ounces of the combination in half-a-pint of water constitutes an excellent colic drink. Give three of these, one every ten minutes. If no improvement be displayed, double the quantity of the active agents and continue the drenches, at the periods stated: these medicines should be persevered with until the symptoms disappear.

Upon the earliest symptom, the horse should be removed to a loose box, amply protected by trusses of straw, ranged against the walls. Into this the animal should be immediately led,—for the reader must understand, colic does not always observe the stages in which it has been described. Occasionally it commences in the wildest form; and if a loose box be not at hand, one can always be extemporised, by removing the carriage from its house, by throwing the doors wide open, and by placing a bar across the entrance.

No disease is more quickly dispelled, if treated at the commencement; nor is there one which, being left to run its course, occasions greater agony, is more fearful to witness, or leads to more terrible results, than spasmodic colic. A single dose of aloes and carbonate of ammonia may vanquish the malady at the commencement; yet, if the attack be allowed to progress, the fit may set all skill and remedial measures at defiance. The principal attention of the proprietor must be given to prevent the administration of the "groom's favourite" or other ignorant nostrums. The case, when properly treated, is cured for a few shillings; and a horse cannot be killed with decency for less money.

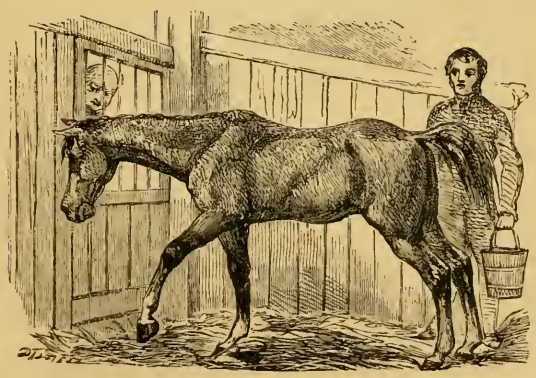
FLATULENT COLIC, WINDY COLIC, TYMPANITIS, ETC.

This is peculiarly the affection of old age. Horses, though not so liable to hoven as are horned cattle, nevertheless, may be blown

out, if permitted to gorge upon moist, green food. Flatulent colic, in the vast majority of instances, however, is not caused by any special fodder, but springs from disordered digestion; living for years upon stimulating diet, breathing a tainted atmosphere, being now weakened by a long fast, then distressed by a too abundant supply; next exhausted by a tedious journey, and subsequently cramped by days of enforced stagnation;—all of these things, ultimately, tell upon the strong body of our domesticated quadruped. The stomach, as the earliest evidence of general debility, loses its tonicity. It cannot digest a full meal; the provender ferments, gas is released, and flatulent colic is the consequence.

A traditionary belief current in the stable asserts this disorder to be provoked by crib-biting, wind-sucking, etc. This is merely imagination. It is an impossibility for air to be sucked into the stomach, and thence make a passage for itself to the intestines; or, even if it did, we know flatulent colic is caused by the super-accumulation of carbonic or hydro-sulphuric acid gases, products of fermentation and decomposition in no way resembling atmospheric air.

The horse which is to be oppressed by flatulent colic exhibits uneasiness after feeding; it hangs the head; breathes laboriously; fidgets; rocks the body, and rests first on one leg, then on the



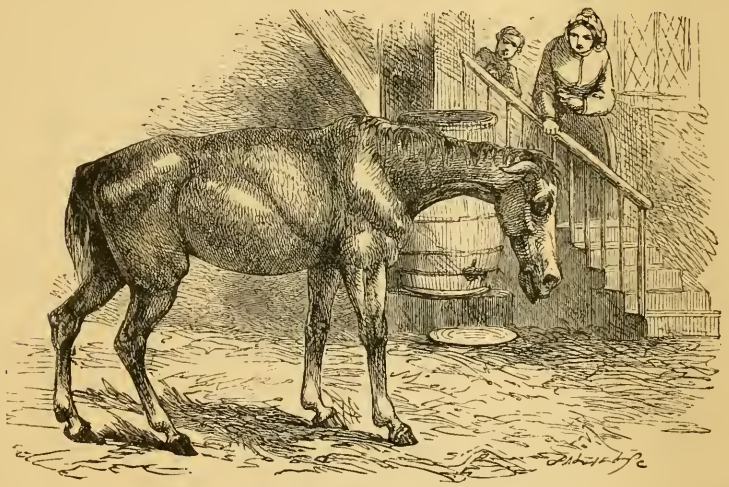
THE FIRST STAGE OF FLATULENT COLIC.

other. These symptoms are exhibited before any enlargement of the abdomen is to be detected. With the swelling of the belly

pawing commences; that action is, however, far too leisurely displayed to be for an instant confounded with the same energetic movement which characterises spasmodic colic.

The horse will stand in one spot throughout the day; even the movement of the foot, before noticed, appears to be an exertion. The eye is sleepy, the pulse heavy, wind frequently passes from the body, and in such a condition the animal remains, slowly becoming worse.

Almost in the same place the horse may stand three or four days; then the abdomen is much increased in size; the animal is



A HORSE DYING OF FLATULENT COLIC.

restless; the pulse is extremely feeble; the breathing is very fast; the pupil of the eye is dilated, and the sight is lost. A walk, as in a mill, is commenced; obstacles are run into or upset; delirium begins; weak neighs are uttered in reply to visionary challenges; the coat is ragged; copious and partial perspirations break forth; the beat of the artery is lost at the jaw; an intermittent flutter is to be indistinctly felt at the heart. At last, the limbs fail; the body falls; struggles ensue, and the creature dies in consequence of the distended abdomen compressing the lungs, thus preventing the breath being inhaled.

Relief should be afforded before the distress grows urgent

When the flatulence comes on without green provender being consumed, the chances favour recovery. Even then, however, the gas may be confined to the stomach, which obliges entire dependence to be placed upon internal remedies. In the beginning, a ball composed of two drachms of sulphuret of ammonia, with a sufficiency of extract of gentian and powdered quassia, may be repeated thrice, half-an-hour being suffered to elapse between each administration. No benefit ensuing, one ounce of chlorate of potash, dissolved in a pint of cold water and mingled with two ounces of sulphuric ether, may, at the expiration of the time named, be horned down. After another hour, should no amendment be perceptible, two ounces each of sulphuric ether and of laudanum, half-an-ounce of camphorated spirits, and one drachm of carbonate of ammonia may be given in a pint of cold water. Throw up tepid water injections by means of a clyster syringe, and repeat them if their action is not responded to.

Should the affection appear to be approaching a fatal termination, and the size of the belly convince the spectator that the gas has entered the intestines, a desperate remedy remains. The situation where the vapour has accumulated may be ascertained by percussion; gently cut the skin which covers the abdomen on the left side, over those places indicated by white spots in the second engraving. A hollow sound will be emitted when the proper point has been struck. Be certain of the last fact, as mistakes made in this operation are very awkward affairs. When assured, take a sharp-pointed knife, and drawing the skin tight over the place selected, nick the integument slightly; then take a

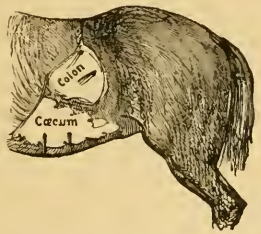
A TROCHAR ARMED WITH A CANNULA FOR PUNCTURING THE ABDOMEN.

fine trochar and push it through the opening which has been made.

This being accomplished, withdraw the stilet, and the gas should rush out with violence; be provided with a small probe to clear the cannula, in case it should become impacted. The gas being released, the abdomen is reduced; withdraw the

cannula, and the skin will fly back, effectually excluding all atmosphere.

The gas, on rare occasions, will be generated a second time; therefore, the points where other punctures may be made are indicated; for it is never well to interfere with those openings which in the first instance were instituted. However, should the operation have to be repeated, pull the integument in the opposite direction; so as not to disturb the original wounds into the abdomen.



THE PLACES WHERE THE ABDOMEN MAY BE PUNCTURED IN THE LAST STAGE OF FLATULENT COLIC.

Puncturing the abdomen for flatulent colic has been practised, both in this kingdom and in foreign lands; it is by no means a certain success, neither is it a certain failure. It assuredly requires boldness to perform it; but, probably, it is quite as beneficial and far more speedy in its effects than the great majority of medicinal remedies.

The duration of flatulent colic cannot be absolutely stated; it may continue for days, it may be cured in a single hour. However, should the abdomen be rapidly distended, then the termination will be sooner reached; but, be the attack quick or slow, neither food nor water should be allowed during its continuance. The groom, while the disease lasts, should occasionally sponge out the eyes, mouth, nostrils, etc. Indeed, humanity would dictate such relief during every serious affection. Subsequent to recovery, feed for a few days on gruel and mashed oats. Give a ball night and morning, composed of extract of gentian and powdered quassia, of each a sufficiency; of extract of belladonna and of sulphate of copper, half-a-drachm. Continue this medicine and the above food until the stomach has regained its tone.

Is flatulent colic a disease provoked by domestication? Certainly! The wild horse would have to travel for his food; in domestication it is placed ready gathered before the animal. Besides, the free animal being ever with his provender, the temptation to gorge the stomach would be absent; moreover, the untrained creature is protected by its instincts, which stable confinement destroys. Little however, is thought of this; the

fact even may be unknown to the great majority of educated horse proprietors. The sense of repletion is no longer indicated with such force as to warn the stabled animal. The responsibility thus cast upon the master has, possibly, never occurred to the mass of mankind, although intelligent care will prevent many disasters.

CHAPTER IX.

THE URINARY ORGANS—THEIR ACCIDENTS AND THEIR DISEASES.

NEPHRITIS, OR INFLAMMATION OF THE KIDNEYS.

The straddling gait is not peculiar to any one disorder. It denotes no more than the region in which the affection is to be sought;

THE GENERAL SYMPTOM WHICH ATTENDS ALL DISEASES OF THE URINARY ORGANS.

but it does not characterise any special disease. Therefore, so general a trait is placed at the head of the chapter treating of ailments confined to the urinary organs; so that he who perceives the horse assume this position may at once recognise that part of the body in which the disorder resides.

Nephritis is not so common at the present time as it used to

be formerly; the growing information of the people has, in some measure, altered the practices of the stable. The master is not quite so much the slave of a groom's ignorance as was once universally the case; the animal is no longer regarded as a mysterious creature which it required a particular education to understand. Urine balls, therefore, are no longer regularly kept in every loft. Nitre—one ounce of "*sweet* nitre," or, to speak correctly, an over-dose of *harsh* saltpetre—may, however, be still permitted, and, by particular horse proprietors, regarded as a charm against every ill. It is true that such a dose of a powerful diuretic is four times the strength which science would, under any circumstances, approve; but certain people, in remote parts, are happy in the conviction that an ounce of "*sweet* nitre" can *possibly* do no harm.

The urinary organs of the horse must be little disposed to disease; they must be capable of surmounting a vast quantity of ill treatment. Were not ignorance thereby protected from the consequences which it provokes, half the horses in England would be disabled; inflammation of the kidneys would become the most common of equine disorders.

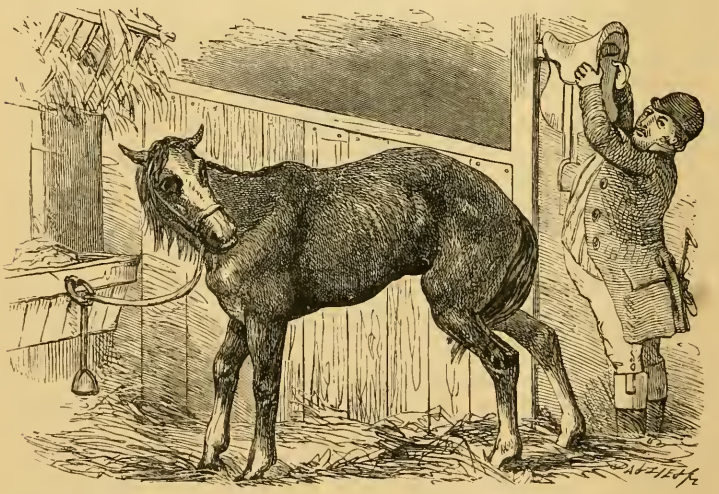
The horse has small need of diuretic medicine; it is much exposed in that direction. Every purge, should it not act as intended, passes out of the body by stimulating the kidneys; the ordinary provender of the animal may operate in the same manner. Foxy oats, kiln-dried oats, new oats; musty hay, mow-burnt hay, new hay; beans in particular conditions; grasses, when first in season, and water of any novel kind will all operate energetically upon the renal glands. Therefore the horse, in its ordinary food, will possibly imbibe more than a sufficiency of a most debilitating medicine; and the knowledge of such a liability may induce some men to withhold "*sweet* nitre" from the future diet of the creature.

It may be necessary to inform men and masters that a horse needs rest when under the operation of diuretic, quite as much as when subject to the action of purgative medicine. It is never safe to take the horse from the stable while the animal is passing any unusual amount of water. Excess of secretion proves the eliminating organs are excited. Before any part can exhibit excitement, an extra quantity of blood must circulate within it, or, it must be in a condition bordering upon inflammation. The

urine is secreted from the blood by the kidneys; therefore, before a greater bulk of water can be passed, of course, more blood must flow through the glands.

The animal in such a state is not fit for work. Every step taken brings into action muscles which pass directly under the kidneys, and which must, therefore, when contracted, compress those organs. During labour, in proportion to the force required, must be the power of the contraction exerted by the organs of motion; in a healthy state such exertion is not always free from danger. Excitement is, however, far from a healthy state. Then the glands are gorged with blood. Being squeezed for an hour or two, while thus swollen or plethoric, they are very likely to be bruised; inflammation may, thereby be engendered, or renal abscess may possibly ensue.

Agriculturists are entreated to pause over the above statement. Such persons often possess a well-bred and promising colt. The farmer, however, is mostly uneasy until he has, according to his

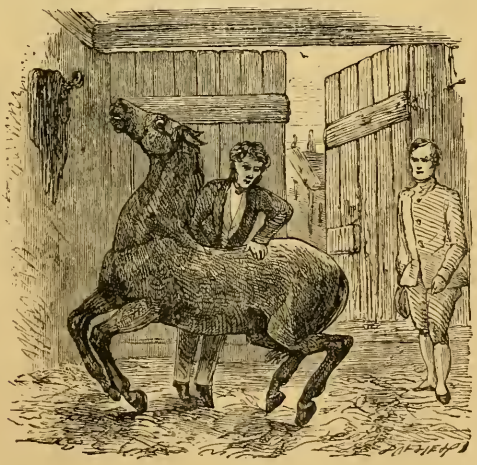


A COLT BROUGHT HOME, AFTER THE FARMER HAS TRIED "WHAT KIND OF STUFF IS IN IT, BY A HARD DAY WITH THE HOUNDS.

own notions, "tried the beast." He may be a personable man, riding fully at "eighteen stun." The colt, probably, would be taxed to carry a third that load. The "*sweet* nitre" dose is administered over night, to take all fever out of the body; and, while the

kidneys are excited, the animal is saddled, mounted and ridden to the hunt. Everybody knows the manner in which most farmers ride. The horse may have a hard run and be kept out for a long day. On the return, a full rack and a heaped manger are placed before the overridden quadruped. Neither are touched. The saddle is removed, and the back appears to be "queerly sticking up." The large full eyes are repeatedly turned round; and the renter of land is in doubt whether the creature is staring reproachfully at him or is simply inspecting its own quarters. However, with the apathy which too many agriculturalists habitually display, the colt is left for the night. By the next morning the animal is ruined, even should it survive an attack of acute nephritis.

The symptoms of inflammation of the kidneys are a hard pulse, decidedly accelerated; quickened and short breathing, suggestive of pain; pallid mucous membranes; frequent looking towards the seat of anguish; head depressed: back roached; hind



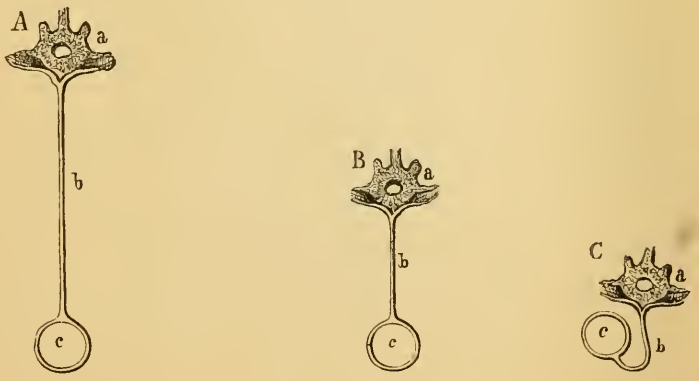
THE TEST FOR NEPHRITIS, OR INFLAMMATION OF THE KIDNEYS.

legs straddled, and the urine scanty. The animal almost refuses to "come round" in its stall, seldom lies down, and crouches beneath pressure, when made upon the loins.

Subsequently, as the symptoms alter, pus or matter may subside in the water. It is indicative of an unfavourable termina-

tion, should a fœtid odour attend the secretion, and should it be deeply tinted by the blood. Death is generally close at hand when the pulse grows quicker, but more feeble,—when pressure elicits no response, when the body is covered with perspiration, and when an urinous smell is perceptible on approaching the animal.

The treatment of nephritis consists in applying fresh sheep skins to the loins. Should the case be urgent, a quantity of luke-warm-made mustard may be first rubbed in, and the sheep skin placed over it; or mustard poultices, in any case, may be employed, and covered over to prevent them becoming dry, till sheep skins can be procured. Injections of warm linseed tea should be thrown up every hour, as these are the nearest approach that can be made to actual fomentation. Two scruples of croton farina, mixed with half-a-drachm of belladonna, may be given immediately, in the form of a ball, the bulk of which should be made up with crushed linseed and treacle. One scruple of calomel, with one drachm of opium, may be sprinkled on the tongue every hour, while the acute stage continues. A pail of



a a a. The spine. *b b b.* The mesentery. *c c c.* The rectum.
A The extent to which the rectum may, by very gradual force, be depressed, without injury to the animal.
B. The rectum, with the natural length of mesentery, when not depressed.
C. The rectum raised, showing that the mesentery is very pliable.

good linseed tea should be kept before the horse; but, as for more substantial provender, none is requisite during the agony of the disease.

Should the slightest doubt be entertained concerning the

nature of the affection, immediately insert the arm up the rectum. This intestine is anatomically spoken of as "a floating gut." It is suspended from the spine by mesentery, or a loose fold of thin membrane; and, therefore, is easily raised or depressed. It is situated under the kidneys, and nothing, consequently, interposes between the diseased organ and the inserted hand, but the pliable coats of the bowel and the fatty substances which immediately surround the glands. The hand is not conscious of the soft wall of the intestine, which covers it. The motion is so free, and the fingers are so readily moved, that previous knowledge alone assures the operator his arm is within a circumscribed canal, and not located in a free space.

A CERTAIN TEST FOR INFLAMMATION OF THE KIDNEYS.

By inserting the hand, and moving it gradually upward, an approach can be made to the immediate vicinity of the inflammation. Sensitiveness will be exhibited, as the seat of disease is touched. Heat will also be felt. A fore leg should, however, be held up on the same side as the operator stands. Should the horse struggle violently, and denote positive agony, when the hand is approaching the region of the kidneys, the signs may be considered conclusive, without attempting further exploration. Should the animal remain quiet at first, nevertheless, let the operator be cautious, as the too near vicinity to the inflamed part provokes resistance, which, in its utter heedlessness, is closely allied to madness.

Several reasons will suggest the point at which the hand should pause. In the first place, pressure cannot benefit a delicately-formed and a diseased organ. In the second place, the agony of the animal may endanger the safety of the operator. In the last place, anything approaching to downright resistance brings the muscles that pass under the kidneys into energetic action, which circumstance is, by no means, favourable to ultimate recovery.

Many men can speak of the pain induced by affections of the kidneys. The torture consequent upon disease of an internal

organ appears to be so excessive, as at times to destroy reason in the human being. No one can look upon a horse suffering from nephritis without feeling that in sensibilities, at all events, the two creatures are alike.

The additional treatment of nephritis consists more in the food than in the physic; linseed, both the seeds and the infusion, may be given for the body's support. The best oats should be procured upon recovery, and the quality of the hay, also, should be attended to; as for physic, that is almost limited to belladonna and to aconite. Belladonna is administered, mixed with four times its amount of opium, so long as the pain is acute :—

Extract of belladonna . .	Half-a-drachm.
Crude opium	Two drachms.

Make into a ball with linseed-meal and honey; give three daily, while the symptoms require them, or, should the pain be excessive, administer one every hour.

The aconite root is intended to lower the circulation. When the pulse is quick and hard, a scruple of the powder may be thrown upon the tongue every half-hour, till the beat of the artery soften, or till the animal appear to be affected by the medicine. The above measures are to be adopted without regard to the calomel and opium previously recommended.

A horse having survived one attack of nephritis, can scarcely, however successful may be the treatment, be restored to its original condition. The glands which have suffered inflammation must be left in an irritable state.

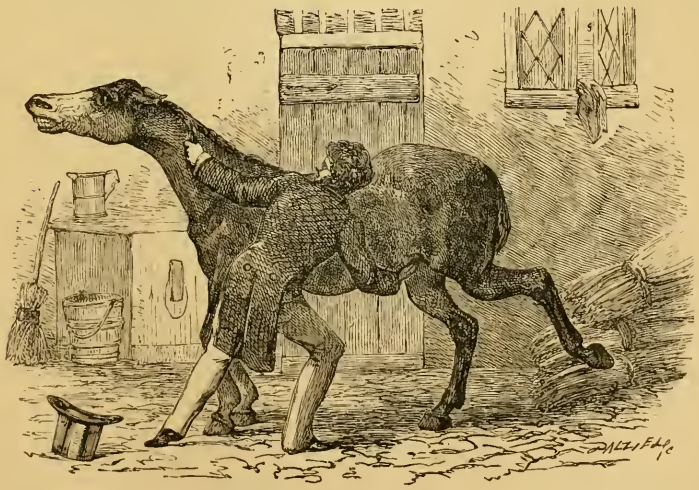
CYSTITIS—INFLAMMATION OF THE BLADDER.

This disorder is somewhat rare in the horse. Few cases have occurred; even those were not strongly marked. Besides the general indications present during nephritis, such as quickened breathing, accelerated pulse, straddling gait, etc., etc., the most prominent sign concerns the emission of the urine. The bladder is irritable at the commencement; the kidneys have not secreted half-a-pint of fluid before it is violently expelled, and much straining, accompanied by sounds expressive of pain, follows the act. As the disease progresses, the bladder is contracted, and the

water issues drop by drop, or as a constant dribble. This particularity marks the disease, which is also distinguished from nephritis by the roached back being absent; the spine rather being hollowed more than is usual in nephritis.

Most lecturers direct the student to insert the arm up a horse with cystitis and to feel the compressed bladder. This is easily accomplished, as the engraving demonstrates; but, is the operation perfectly safe? Mucous membrane, when inflamed, becomes acutely sensitive. The bladder possesses a thick coat of that substance, and the hand, grasping an organ of this formation when in a state of disease, would, probably, torture the sufferer to frenzy. It is not wise to excite a creature commanding so huge a strength. There is, however, a test which yields as certain a response, and, at the same time, is far less hazardous. This consists in placing the hand under the flank, and keeping it there

A DANGEROUS TEST FOR INFLAMMATION OF THE BLADDER.



A SAFER TEST FOR INFLAMMATION OF THE BLADDER.

till all the action which could be attributable to skittishness has disappeared; then press the abdomen, which, should it be hard

and resistant, is a convincing proof cystitis is not present; for contraction of the recti abdominis muscles would force the contents of the cavity into violent contact with the inflamed bladder. Should any doubt be entertained concerning the condition of the muscle named, a little more pressure will soon ascertain the fact. However, let the person who applies the test be prepared for the consequence; as the application of pressure to a diseased organ provokes a sudden and energetic resistance, intended to strike the tormentor backward.

The treatment for inflamed bladder and diseased kidneys are alike as regards the administration of aconite root, extract of belladonna, calomel, and opium. The reader is, therefore, in some measure referred to the article upon nephritis; there is, however, a difference in application of counter-irritation by means of a rug doubled over a cloth, which last is saturated with strong liquor of ammonia diluted with six times its bulk of water. Should this not be within reach, hot cloths retained under the belly are the next best application; but these require constant change and a larger supply of heated fluid than most private establishments can command. Should both recommendations prove useless, then apply cloths, dripping wet from a cold bath, and keep renewing them so often as they become warm.

The cause of cystitis is the same as produces many cases of inflamed kidney, namely, the abuse of medicine or new and

APPLICATION OF THE AMMONIACAL BLISTER.

unwholesome food; blows, likewise, may induce it. Kicks under the belly, the too common mode of expressing impatience among

carters, are very likely to provoke it. Horses are frequently seen in the streets of every town, now whipped to make them proceed; then, the rein jagged to command the animal's "stand still." Next, the whip is again applied; afterwards, the animal's belly is spitefully aimed at with the heavy boot of the countryman. The horses know not how to interpret these different signs; they become confused; they turn various ways, as if they hoped by such devices to please their chastiser. All is in vain! At length the animals burst into perspiration and shiver violently; by their alarm they are rendered stupid. But so disgusting an exhibition of folly and of cruelty on the part of the driver mostly creates small indignation in the wayfarers who behold it. The spectators generally look on with smiling countenances, and for the most part move onward without a word of displeasure or rebuke. To the human mind, a man appears invested with absolute authority over the life which he has bought. So, also, no man risks reprobation, who keeps his animals upon poisonous provender.

SPASM OF THE URETHRA.

This affection is commonly designated "spasm of the neck of the bladder." The part named, however has no fibre capable of excitation; and it is difficult to understand how the elastic tissue, at the opening of the receptacle, can display a condition which is inherent only within the contractibility of muscle. The compressor urethræ muscle, however, being morbidly excited, is more than capable of preventing all discharge of urine.

The causes which provoke the spasm are not thoroughly understood. The affection is mostly attributed to some acridity, existing in the food or water; else, the supposed agent is said to be developed during the process of digestion.

The symptoms are, a widely straddling gait; total suppression of urine, or small portions forcibly ejected at distant intervals. The suffering attendant on distension of the bladder is sometimes so violent that the affection has been mistaken for phrenitis. At other times, the horse has been imagined to be griped. Both these blunders are unpardonable. The haggard countenance, copious perspirations, and the frequent glances towards the flanks, joined to the straddling gait, and to the desperate, but at the same time

guarded struggles, are all opposed to such conclusions. Were a proper examination instituted, the real nature of the affection would at once be made apparent beyond the possibility of error.

Insert the greased arm up the rectum, and when fully advanced, make pressure downwards; the dilated bladder will then be under the hand. The best remedies are sulphuric ether and laudanum, which should be given in large quantities. Four ounces of each should, in a quart of cold water, be administered by the mouth: the like quantities, blended with three pints of cold water, ought to be thrown up as an injection. The last being given, the hand should be placed over the opening and pressed upon it for ten minutes. Should one dose not succeed, in a quarter of an hour the injection may be repeated. Again and again it must be had recourse to, till the spasm is vanquished or till the urine flows freely forth.

MODE TO ASCERTAIN THE DISTENSION OF THE BLADDER.

CALCULI.

Stones within the urinary apparatus are designated by various names, that are derived from the situations in which they are found. Thus, renal calculus represents a stone which has been discovered within the pelvis of the kidney. Uretal calculus implies a stone found within the tubes leading from the kidneys to the bladder; but calculi of this kind are as yet unknown in the horse. Cystic calculus signifies a stone which resides in the cavity of the bladder. Urethral calculus denotes a stone which was detected within the passage leading from the bladder. Of these, the cystic are altogether the largest, and the renal, at a considerable distance, rank as the next in magnitude. All consist of carbonate of lime or of common chalk, held firmly together by the secretion of the mucous membrane.

The symptoms which characterise renal calculus are not well marked. The urine may become purulent, thick, opaque, gritty, or bloody. Exertion may provoke extreme anguish, resembling a

severe fit of colic; but the attack is distinguished from genuine gripes by the back, during the pain, being always roached. However, the most decided symptom is of a negative nature; being the absence of stone in the bladder to account for the diseased urine. The inference is, moreover, strengthened if, when the hand within the rectum is carried upward, pain and alarm are elicited; or if pressure made upon the loins causes the animal to shrink.

Cystic calculus is denoted, as is the previous kind of stone, by certain conditions of the urine. Added to these general signs the water, when flowing forth, will often be suddenly stopped, and every emission is followed by violent straining. Abdominal pains, also, are present; but the back is rather hollowed than roached. The point of the penis is, in particular instances, constantly exposed: and the horse, when going down hill, sometimes pulls up short, either to recover from torture or to relieve the bladder.

The way to ascertain the presence of cystic calculus is to make an examination per rectum. Make the investigation with all gentleness. The foreign body may then be distinctly felt; even its size, form, and irregularities can, by this means, be discovered.

A CERTAIN METHOD OF ASCERTAINING IF THERE BE CALCULUS IN THE BLADDER.

Urethral calculus is a small stone, which, during the flow of urine, has been carried out of the bladder and is spasmodically grasped by the muscle of the urethra. The passage is effectually closed, and great suffering is induced. Should the stone be impacted within the exposed part of the canal the precise situation is easily told. Behind the stoppage, the passage is distended by fluid; while before it, all is natural. The calculus should be cut down upon and removed; the wound being afterwards dressed with a solution of chloride of zinc—one grain to the ounce of water. This is an easy and by no means a dangerous operation. Any person of ordinary skill, having a sharp knife, may undertake it.

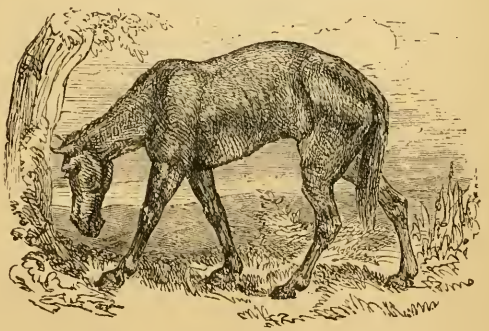
For renal calculus little can be done. That little, however, consists in mingling two drachms of hydrochloric acid with every pail of water, and allowing the animal to imbibe as much as it pleases.

Should the medicated drink be refused, the horse must be starved into accepting it. With this liquid, however, the stone must be small to be dissolved; but it effectually checks the further increase of the calculus.

Lithotomy is the name given to that operation, by which large stones are removed from the bladder of the horse. It is far too complicated and too serious a proceeding to be entrusted to any general reader. No direction, which possibly could be misconstrued, shall therefore be attempted. When an operation is required for stone in the bladder, a qualified veterinary surgeon had better be employed. Mr. Simmonds, late of the Royal Veterinary College, Camden Town, however, deserves praise for having invented an instrument by means of which stone can generally be removed from the bladder of the mare, without resort to the knife being necessary.

HÆMATURIA, OR BLOODY URINE.

The name fully characterises this affection. The blood emitted may consist of small clots; it may congeal after it has left the body; or it may be entirely mingled with (giving a brownish tinge to) the water. Upon the exhibition of this disorder, always treat the symptoms first; when all chance of immediate danger has disappeared, examine the body, to ascertain whence the hæmorrhage proceeded:



A HORSE SUFFERING FROM HÆMATURIA, OR BLOODY URINE.

because, in this affection, the symptoms really constitute the disease; and when the first has disappeared, the last is cured.

The extent of the bleeding, of course, regulates the symptoms.

When that is copious, the breathing is short and quick; the pupils of the eye are dilated; the pulse is not to be felt at the jaw; the head is pendulous; and the visible mucous membranes are cold as well as pallid. Lifting the head produces staggering; if continued, the animal would fall. The back is roached; the flanks are tucked up, and the legs widely separated, as though the horse was aware of its inability to support its body.

The treatment consists in disturbing the sufferer as little as possible; in acting upon the report received, for in a case of this kind it is hardly credible there should be any mistake. Administer, as gently as it can be done, two drachms of acetate of lead in half-a-pint of cold water, or as a ball, if one can be delivered. If this has no effect, in a quarter of an hour, or sooner, should the symptoms demand haste, repeat the dose; adding, however, one ounce of laudanum or two drachms of powdered opium. Give two more drinks or balls of the like composition; but should these be followed by no beneficial result, change the medicine, after the administration of one ounce of acetate of lead.

When the indications are not alarming, the horse may be left for a couple of hours, with strict orders that the animal be watched, but on no account disturbed. Should, however, activity be required, obtain some of the coldest water, and have several pailfuls dashed from a height upon the loins. After this, inject some of the same fluid, allowing the water to flow freely forth from the anus—the object only being to procure the advantages of excessive cold. For medicine, a trial may be made of the ergot of rye. Pour on to four drachms of the drug half-a-pint of boiling water, and, when cold, add one ounce of laudanum and four ounces of dilute acetic acid—not vinegar, as that always contains sulphuric acid, which would counteract the action of the lead. Two drinks, two enemas (each lasting twenty minutes), and any quantity of water upon the loins will serve for the second hour.

If these remedies have produced no change, all further treatment must be suspended for eight hours, at the expiration of which period the treatment may be resumed, and the previous measures repeated.

Should the hæmorrhage have ceased, leave the horse undisturbed for the night. On the following day, if no blood has been noticed, have the animal gently led under cover. Then proceed

to examine the horse per rectum. If the kidneys are not enlarged, hardened, or sensitive, and if the bladder is without stone, but of its natural thickness, there is every prospect of a favourable termination.

Should the bladder be thickened, adopt the treatment laid down for cystitis; if stone is discovered, an operation is indicated; be the kidneys disorganised, the case is hopeless. If none of these are present, then any of the following medicines may be experimented with, it always being uncertain which will prove beneficial:—

Extract of catechu	In one-ounce doses, daily.
Strong infusion of oak bark .	Three pints, daily.
Alum	One ounce, daily.
Sulphate of iron or of copper	One ounce, daily.
Muriatic acid	Six drachms, daily.

DIABETES INSIPIDUS, OR PROFUSE STALING.

In this affection, which, properly treated, is but a passing annoyance, the thirst is enormous, but more fluid is voided than the animal drinks. The strength and condition are quickly lost, while the flesh fades rapidly away.

Either the horse has been tampered with by the groom, or the hay, oats, or beans are unsound. A sudden change of water is said to produce the disorder, but that, probably, is far more a stable excuse than an established cause. However, change both food and water. Take into the stable two slips of blotting paper. Dip the ends of them into some of the urine, which will always be retained in the interspaces of the brick flooring. Smell one piece. If it communicates a scent resembling violets, that is proof positive turpentine has been administered. Dry the other piece. Should that, when perfectly dry and a light is applied, prove to be touch-paper, the evidence is conclusive: "sweet nitre" has been secretly given to the animal. Should both these tests fail, the groom is innocent, as other diuretics are unknown in the stable.

The horse should not be taken out while the prominent symptom lasts; it is languid; is unfit for work, or even exercise. No brutality can quicken the body when the vital powers are ex-

hausted, but inattention to the suggestion of mere humanity may change a slight and temporary evil into a severe and critical disorder—nephritis.

A pail of good linseed tea, made by pouring boiling water on whole linseeds, and afterwards allowing the infusion to stand till lukewarm, should be constantly before the manger. The animal may drink according to the dictates of its condition. The linseed, when strained off and mixed with sound bruised and scalded oats, may be given as food. No hay or grass should be allowed. Attend to the grooming, although it is a sick horse and does not go out. Nothing relieves the kidneys more than the restored action of the skin. A ball may be given every day. It should consist of—

Iodide of iron	One drachm.
Honey and linseed meal .	A sufficiency.

Or, should a drink be preferred, dilute—

Phosphoric acid	One ounce.
Water	One pint.

Give night and morning.

ALBUMINOUS URINE.

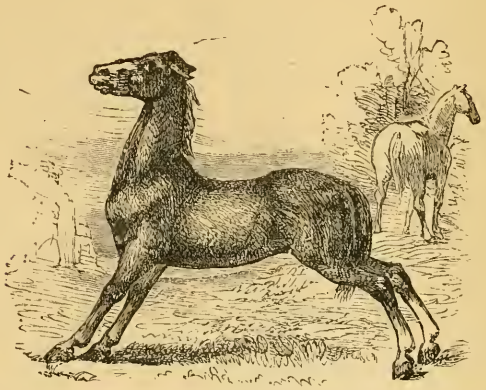
This affection is not of very common occurrence. Two cases are, however, reported in Percivall's *Hippopathology*.

The positions of both horses were remarkable. One stretched the fore and hind legs out, as though it were about to urinate; the other roached the back, and brought the hind feet under the body as far as possible. Turning in the stalls was, in each case, accomplished with difficulty, and the straddling gait, remarkable in both, indicating the seat of the affection.

Some urine being caught by the groom, it was thick, but clear —like melted calves' foot jelly—and, when cold, the surface was uneven. Bichloride of mercury being added to a portion of the fluid, caused a thick, colourless, opaque substance, resembling coagulated white of egg, to be thrown down, leaving a clear straw-coloured liquor above the settlement. Another portion, being first treated with acetic acid, afterwards mixed with prussiate of potash, and subsequently boiled, became in appear-

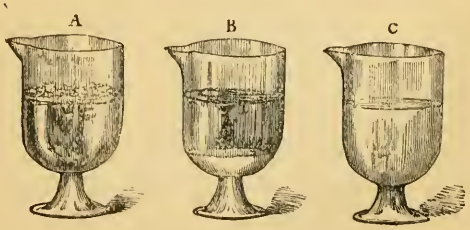
ance like to milk. With time, however, a white sediment occurred, leaving the fluid perfectly clear.

These cases were treated by a depletive system; mustard was



THE POSITIONS ASSUMED BY HORSES HAVING ALBUMINOUS URINE.

applied to the loins for a brief space. Perfect rest, strict attention to diet, and repeated doses of opium, constituted the after measures.



THE TESTS FOR ALBUMINOUS URINE.

A. The appearance of the urine, when cold, being partially rough on the surface. Sometimes, however, the fluid is merely thicker than usual, appearing like water in which a portion of gum has been dissolved.

B. The white precipitate produced by the addition of a portion of the solution of bichloride of mercury.

C. Some urine to which a little acetic acid was first added. A portion of the solution of prussiate of potash was subsequently introduced. The liquid was then boiled, when it became thick, white and opaque, like milk.

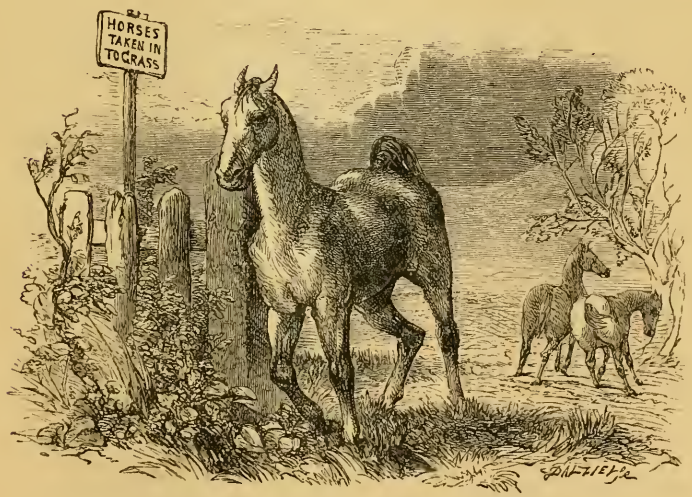
It is also mentioned that diuretics, tonics, and stimulants were tried, but all proved injurious. Both animals ultimately recovered.

CHAPTER X.

THE SKIN—ITS ACCIDENTS AND ITS DISEASES.

MANGE.

This troublesome disease, which is the itch of the stable, generally preys upon the poorly nurtured, the aged or the debilitated.



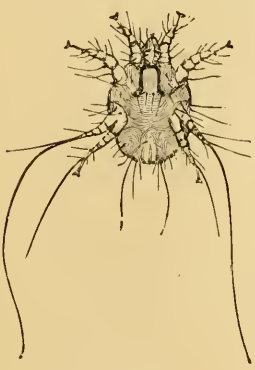
SYMPTOMS OF MANGINESS WHEN CAUGHT IN THE FIELD.

Neglect is the almost necessary associate of poverty; loss of pride attends loss of means—for seldom can the spirit of man brave the frowns of fortune. The want of emulation is always seen most emphatically without the doors of the home; the garden denotes the failure of industry, and the stable languishes under an absence of activity. The grooming is avoided; the horse's food is proportioned to the master's means, and is not given at regular hours;

coarse diet and a filthy abode produce that weakness of constitution which renders the equine skin a suitable nidus for the mange insect.

The disease once developed is highly contagious. All horses standing near the one affected, all that may touch it, or the shafts to which it was harnessed, or anything that has been in contact with the contaminated body, are inoculated. The very robust, to be sure, may escape; but this circumstance is to be regarded as the most stringent test of actual health, rather than as the declaration of that state which the majority of mankind are pleased to term perfect condition. The animal which escapes must be of so sound a body as to afford no nutriment to the disorder which preys upon debility. Probably not one horse in ten thousand could resist so searching a test; the trial however, after all, would be no more than a negative proof, or would not allow the fact of its contagious nature.

Mange depends upon the presence of an insect which is classed with spiders, though, to the uninitiated, it looks, under the microscope, far more like a deformed crab. A representation of this parasite, very highly magnified, is here given.



THE MANGE INSECT.

The parasites are, when attentively searched for, to be recognised by the naked eye. Any man, by scratching the roots of the hair upon the mane of a mangy horse, may loosen a portion of scurf; let this scurf be received or cast upon a sheet of white paper. The paper then should be subjected to a strong light; the glare of the noon-day sun is to be preferred, as warmth greatly influences the activity of the parasites. Numerous very small shining points may thus be seen moving about the mass in all directions. Those points are the insects, and, considering the easy means we now possess of demonstrating their existence, it seems astonishing that veterinary science was so long before it recognised the true source of the contagion.

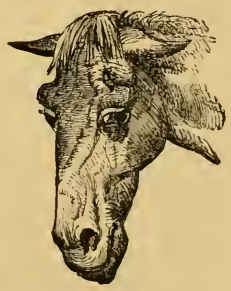
In the vast majority of cases this disease first appears in the mane, among the hairs of which a quantity of loose, dry scurf is

perceptible. Before such a sign, however, is to be recognised, excessive itchiness is exhibited. The disease, once established, soon extends to the head, to the neck, to the withers, to the sides, to the loins and to the quarters; only in very exceptional cases are the legs exposed to its attacks. As the disorder proceeds the hair falls off, leaving vacant places upon the body; these have a peculiar, dry, acrid, and irritable appearance; they suggest that portions of the body have been scorched with quicklime, so irregular, patched, and scabby are the parts just referred to. The integument in these places greatly thickens, and is no longer soft and pliable as a lady's glove, but becomes corrugated or thrown into well-defined folds.

The hairs, however, are not all removed, a few, and only a few, remain; these cling with exceeding tenacity to the surfaces which their fellows have quitted. The force required to pull out one of these remaining hairs is somewhat surprising, and the hair being extracted, the roots upon close examination will be discovered enlarged and far more vascular than is usual.

The above are the broad and more obvious indications of mange. However, should the diseased locality be more minutely inspected, a number of small pimples are discerned; these elevations are clustered upon different spots. As they mature, the point of each

A MANGY PIECE OF SKIN.



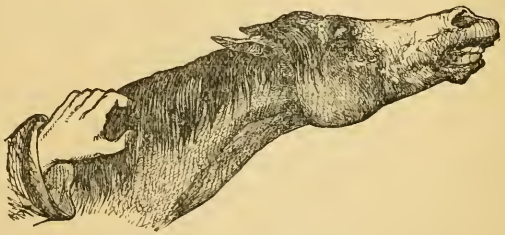
THE HEAD OF AN OLD, MANGY WHITE HORSE.

contains a very slight quantity of gelatinous fluid; the vesicles ultimately burst; the contents exude, and become dry through the absorption of the atmosphere, forming incrustations upon the surface. Add to this, the irritation provokes the diseased animal to scrub itself against any irregular, projecting surface which may be at hand. Raw places, frequently of magnitude, are often occa-

sioned by the friction so rudely applied; from this source another set of crusts spring up. The places which are denuded, therefore, may present a very varied aspect, but still the parched appearance of the scurfy and dry skin affords the best external evidence of the presence of mange.

An animal, which from being grey in youth has grown white with age, still retains to its death the signs of its youthful colour upon its skin. The integument is dark, although the hair may have lost the last vestige of its original hue; the chequered appearance established by mange gives to the white horse a particularly ragged and dejected aspect.

Unfortunately man is not at the present moment sufficiently enlightened to recognise the symptoms which indicate an approaching attack of mange; but the animal energetically announces the malady so soon as the contamination is established. The disorder



THE TEST FOR MANGE.

being confirmed, its existence is readily ascertained; the fingers have only to be inserted among the roots of the mane, and the part titillated with the nails. The horse thus treated will stretch forth the head and neck, will compose its features into an expression of excessive pleasure, and will continue motionless so long as the hand remains upon the crest.

This sign being witnessed may be esteemed conclusive. Let such an animal be placed in the sunshine for an hour, should the weather permit; otherwise, allow it to stand in the warmest house which is unoccupied; then have the coat thoroughly dressed or whisked, until all the loose scurf and incrustations are removed; afterwards have the following ointment well rubbed in. Mind the man who whisks the horse goes near no other animal for eight and forty hours. See that every portion of the skin, from the tip of

the nose to the point of the tail, is anointed; mark that no crevice or irregularity escapes from the bottom of the coronet to the apex of the ears.

Liniment for Mange.

Animal glycerine	Four parts.
Creosote	Half-a-part.
Oil of turpentine	One part.
Oil of juniper	Half-a-part.

Mix all together, shake well, and use.

Or,

Oleum picis	Half-a-pint.
Train oil	One pint.

Into which stir a small proportion of powdered sulphur.

It is impossible to state accurately how much will be required to dress the horse; the disease, the coat, and the size vary so materially in different animals. About one pint and a half is, however, the general quantity employed for one application; every portion of the coat must be saturated, and in that condition the animal should be left till two clear days have expired; thus, supposing the liniment to be used upon a Monday, it is left on until the following Thursday. Then have the surface washed with soft soap and warm water; dry the body, and allow the animal to stand in a warm spot, as before, so that every portion of moisture may evaporate. Afterwards employ the whisk, as has been previously directed; subsequently repeat the anointing. That operation must be again gone through for the third and last time, after two clear days have once more expired, when the disease ought to be cured. All the insects should have perished, and the skin have been benefited by the stimulation to which it has been subjected.

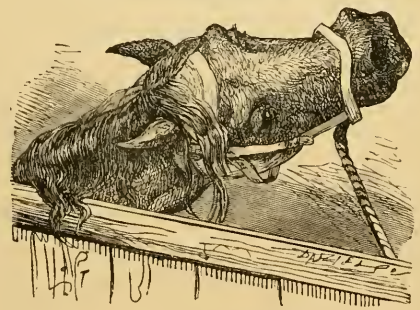
There are many preparations employed to cure mange. All have some repute, though all (save that already given) are attended with some danger.

The question has been much debated, "whether man can derive the itch from an animal?" Imaginary proofs, favouring the possibility, are every now and then confidently promulgated; but all doubts seem to have been put to rest by the investigations conducted by M. Bourguignon. That gentleman demonstrated the unfitness of one creature to support the parasite generated by

another. Horses may be violently irritated by insects bred by fowls; but, remove the birds, the supply ceases, and the irritation dies away. So an individual, handling mangy horses, may get some of the acari upon him, and cause vexatious itching; but let the man keep away from the contaminated stable, and the sensation is quickly lost. Frank Buckland placed the acari on his arm; they caused some irritation, but not to any great extent; and his experiments, when repeated, proved, so he told the reviser, that these parasites could not even live on the human skin. The repeated and repeated renewal of the pest gives a seeming warranty to the popular belief. Certain disorders assuredly are communicable throughout every species of life, as though to prove to the stubbornness of mankind that all nature is akin. Such are hydrophobia in the dog, and glanders in the horse; were all affections, however, equally interchangeable, the inhabitants of this world would speedily become one breathing mass of disease.

PRURIGO.

This affection may lead many a gentleman to imagine his horse has caught the mange; the leading symptom in each disorder is the same. Excessive irritability of the skin is, in prurigo, generally exhibited during the spring of the year; the animal will rub itself with a fury which often removes portions of the coat, but which never exposes the dry and corrugated patches that characterise genuine mange.



THE PROOF OF PRURIGO.

It is very annoying to behold the horse, when in the stable, scrubbing its neck upon the division to the stall; it is provoking

to witness the animal leaving its corn for the same employment It excites the fancy of the master and conjures up the dread of every cleanly horse proprietor; the symptom is, however, easily eradicated. It only denotes heat of body; let a portion of the hay be abstracted and a couple of bundles of cut grass be allowed each day; let a mash be given night and morning, until the bowels freely respond, and, without further measures, the annoyance usually ceases.

The irritation may not, however, subside so quickly as shall be desired; to hasten its departure, either of the annexed may be applied externally.

Washes for Prurigo.

Animal glycerine	One part.
Simple water or rose-water .	Two parts.

Mix.

Sulphuric acid	One part.
Water	Ten parts.

Mix.

Creosote	One part.
Oil	Eight parts.

Mix.

Either of these, probably, will answer; but the writer strongly recommends the first; at the same time, it is well to try and reach the source of the disease, or to improve the blood. For this purpose, the following drink should be given every night after the last meal.

Drink for Prurigo.

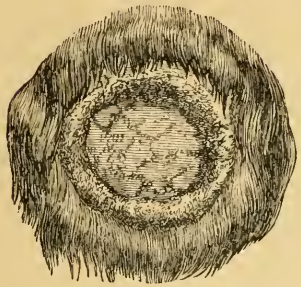
Liquor arsenicalis . . .	One ounce.
Tincture of muriate of iron	One ounce and a half.
Water	One quart.

Mix, and give half-a-pint for a dose.

A week after the irritation has subsided, all medicine may be withdrawn; but it is always well to see that a sufficiency of exercise be given, and to allow an extra feed of oats with a pot of porter every day. These last will restore the strength; for every form of disease is to be regarded as the most emphatic testimony of weakness.

RINGWORM.

This affection, at first, is simply a disfigurement; but, if neglected, it becomes a troublesome disorder. In the primary instance, the hair falls off in patches, leaving visible a scurfy skin; some say there are pimples under the scurf, but the author must confess he was unable to discern them in those cases which he examined. The scurfy particles, however, are somewhat large, and resemble, in no little degree, the scales which form the bulk of bran. At first, these pieces or flakes of cuticle cover the entire surface; but, ultimately, they congregate upon the circumference which, by their numbers, is made to assume a raised appearance. Should the ringworm not be attended to, the outward margin, at last, begins to ulcerate, becoming the more difficult to eradicate, in proportion to the time of its continuance and the extent of the ulceration.



A REPRESENTATION OF A RINGWORM ON A HORSE.

For the cure of ringworm, a rigid attention to cleanliness is imperative; the parts should, at all events, be washed night and morning with mild soap, and hot, soft water; the places (these having been rendered perfectly dry) may be dressed sparingly with pure paraffin or carbolic acid, and this in most cases will effect cure; or, one of the following preparations may be applied and laid rather thickly upon the denuded spot:—

Ointments for Ringworm.

Animal glycerine . . .	One ounce.
Spermaceti	One ounce.
Iodide of lead	Two drachms.

Rub the glycerine and spermaceti together, and when thoroughly incorporated, add the iodide of lead, or use any of the appended:—

Nitrate of lead	Two drachms.
Simple ointment . . .	Two ounces.

Mix.

Oil of tar	Half-an-ounce.
Simple cerate	One ounce.

Mix.

Creosote	Two drachms.
Simple cerate	One ounce.

Mix.

Oil of Juniper	One drachm.
Simple cerate	One ounce.

Mix.

Besides the above, which are not one half of the remedies in general use, some parties are loud in the commendation of a saturated solution of a sulphate of iron. Others are strongly prejudiced in favour of pure liquor plumbi; another class protest they employ nothing but compound alum water, which invariably and speedily affords relief. There are people who regard a strong infusion of tobacco as a charm for ringworm; while another set will hear of nothing for that purpose but hellebore ointment.

The following mixture also will greatly assist in effecting cure, or even an ounce of liquor arsenicalis in place of the following mixtures may be sprinkled daily over a feed of corn:—

Drink for Ringworm.

Liquor arsenicalis	One ounce.
Tincture of the muriate of iron .	One ounce and a half.
Water	One quart.

Mix, and give every night, half-a-pint for a dose.

This drink must be continued till every vestige of the disease has disappeared. However, it frequently happens that after the central bare spot has been cured, ulceration remains about the circumference. Treat this with either of the following lotions:—

Permanganate of potash .	Half-an-ounce.
Water	Three ounces.

Mix, and wash gently over the part six times, daily, or,

Chloride of zinc	Two scruples.
Water	One pint.

Mix.

The ulcers should be punctually moistened with the last preparation at the periods already stated, and the horse should be thrown up during the treatment. The food should be of the best, and a month ought to be allowed for the cure.

SURFEIT.

Old practitioners generally entertain very false opinions concerning the importance of surfeit, they being inclined to employ more stringent measures for its eradication than the real nature of the disease demands. The affection is rather annoying than dangerous; it makes its appearance suddenly, and seldom involves the entire body. It is a sudden rash or a quantity of heat spots bursting out upon the skin; the spots are round, blunt and slightly elevated; they resemble the blotches which, during hot

A HORSE AFFECTED WITH SURFEIT.

weather, often appear upon the human countenance, only, the horse's integument being so much more active than the skin of man, the outward affection in the animal may be regarded as proportionably the more severe. Frequently, during the eruption, the pulse is tranquil, the spirit and appetite being good; when such is the case, the lumps mostly disappear in a few hours. Still, the food should be looked to; about eight pounds of hay should be abstracted, and two bundles of cut grass allowed per day; the corn should be kept up or even increased, and a handful of sound, old beans, which have been properly crushed, should be

mingled with each feed. The stable should be airy, and the following drink should be given every day for a month :—

Liquor arsenicalis	One ounce.
Tincture of the muriate of iron .	One ounce and a half.
Water	One quart.

Mix, and give once, daily, one pint for a dose.

Should the horse be young, and have been neglected throughout the winter, a surfeit sometimes appears which is of a different character. The lumps do not disappear; but an exudation escapes from the centre of each. The constitution is involved in this form of disease, and the malady, if unattended to, is apt to settle upon the lungs.

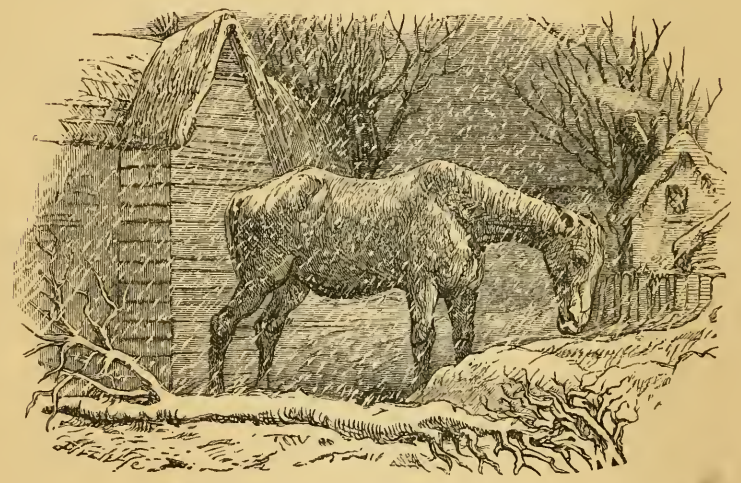
Should the attack assume the last appearance, on no account take the animal out, not even for exercise. Attend to the perfect cleanliness of the bed, and keep every door and window in the stable open during the day. Feed as directed for the previous form of surfeit, and allow two or three bran mashes whenever the bowels appear constipated; but do not give mashes after the constipation is removed. The desire is not to weaken the system by purgation, but simply to relieve the body; administer the drink recommended above only; give one night and morning, though, should the appetite suffer, reduce the quantity, or withhold all medicine.

Clothe warmly; bandage the legs, and remove from the stall to a loose box; if the pulse suddenly sink, two pots of stout may be given at different times during the day. If the appetite is bad, good gruel instead of water must be constantly in the manger; cut carrots, if presented a few at a time, will generally be accepted. However, with all such care, a very speedy termination is not to be expected; nature is casting forth something imbibed during a winter of neglect, and no art can quicken the process. The shortest cases of this kind mostly last a fortnight, during which time the treatment, and the entire treatment, merely consists in good nursing, and in liberally supporting the body.

HIDE-BOUND.

Strictly speaking, the condition signified by the above term is not so much a disease as the consequence of exposure, of poor pro-

vender, and of neglect. Thrust a horse which has been accustomed to wholesome food and a warm stable—thrust such an animal into a straw yard and leave it there, through the long and severe winter of this climate. Let the creature which has been used to have its wants attended to and its desires watched—let it for months exist upon a stinted quantity of such hay as the farmer cannot sell—let it go for days without liquid, and at night be driven by the horns of bullocks to lie among the snow or to shiver in the rain—let an animal so nurtured be forced to brave such vicissitudes, and in the spring the belly will be down, and the harsh, unyielding skin will everywhere adhere close to the substance which it covers.



ONE OF THE CAUSES OF HIDE-BOUND IN HORSES.

Liberal food, clean lodging, soft bed, healthy exercise and good grooming compose the only medicine imperative for the cure of hide-bound. The relief, however, may be hastened by the daily administration of two of those tonic and alterative drinks which act so directly upon the skin :—

Drink for Hide-Bound.

Liquor arsenicalis . . .	Half-an-ounce.
Tincture of muriate of iron	One ounce.
Water	One pint.

Mix, and give as a dose.

LICE.

These parasites are the consequences natural to the states of filth and debility. Insects which have been mistaken for lice sometimes infest large stables, and almost drive the horses frantic with the itching they provoke. Application after application intended to destroy lice is made use of. Every recognised source of contagion is exterminated. Internal as well as external medicine is resorted to, but every endeavour to remove the annoyance signally fails. The horses are fat, and feed upon the best; yet they seem to breed the parasites peculiar to the opposite condition. At last some one points to the hen roost which leans against the stable. That building is pulled down, and with it the nuisance disappears.

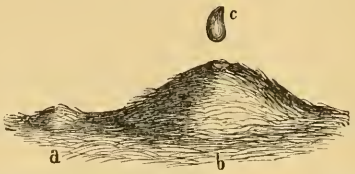
It may to the reader appear strange that the application which killed lice did not destroy the insects derived from fowls. Those parasites which were upon the horse doubtless perished; but the dressing being washed off the pests came again and again, being supplied by the source of all the mischief.

Insects breathe through the skin. On that account, a hornet is more readily destroyed by dropping a little oil upon the exterior surface, than by immersing the head in hydrocyanic acid. All therefore requisite for the removal of lice is, smearing the entire body with any cheap oil or grease, or the body may be washed with soft soap, carbolic acid, and water. But when the skin is washed the business is not ended. Generally the horse troubled with lice is hide-bound, and may have various other affections, derived from the debility which generated the parasites.

LARVA IN THE SKIN.

These annoyances are the result of turning an animal out to grass—the fly, whence the trouble is derived, never entering the stable. The insect rejoices in the freedom of the field, and man, by turning out his horse, finds the creature a fitting spot for the deposit of its eggs. This body is carefully deposited upon the back or sides. The warmth of the animal hatches the larva; no sooner is it endowed with life than, with the instinct of its kind, it burrows into the skin. The integument of the horse, however thick

it may appear, is soon pierced by the active little maggot, which, thus snugly housed, retains its lodging until the following spring. During the winter a small lump denotes its abiding place; but, as the second summer progresses, a tolerably large abscess is instituted.



a. The winter residence of the larva. *b*. The summer abode of the insect.
c. A drop of tallow falling upon the centre of the abscess.

The interior of the abscess, of course, contains pus. Upon that secretion the insect lives and thrives. The inhabitant of a warm abode, and surrounded by its food, the early period of life, no doubt, is, for an inactive being, highly agreeable. A division of one of these abscesses, when fully matured, is represented below.

DIAGRAM OF THE LARVA ABSCESS, DIVIDED THROUGH ITS CENTRE.

1. The spot through which the larva breathes.
2. The insect, full size.
3. The mouth of the parasite.
4. The pus surrounding the body, and upon which the creature lives.
5. The sac of the abscess.
6. The fat of the horse, or the adipose tissue, much swollen and inflamed.
7. The skin.
8. The superficial muscle.
9. The muscle proper to the body of the animal.

Such swellings are acutely painful, and prove the sources of much annoyance. They mostly occur upon the back. The saddle cannot be laid on one of these tumours, and, as the spine supports much of the harness, the proprietor has the vexation of beholding his horse rendered perfectly useless; for suffering, should service be exacted, occasions the creature to excite displeasure; besides the pranks thus provoked by torture, often continue after the cause has been removed.

Upon the summit of the abscess appears a black spot. It is at this spot the larva receives the air needed to support a dormant

existence. This fact being known to certain people, the knowledge is employed to destroy the parasite. The swelling is first slightly greased, and then a drop of melted tallow is let fall upon the breathing place. By such means the insect is effectually suffocated, and assuredly dies.

Others employ a darning needle as the instrument of execution. The needle is thrust through the central spot into the swelling, for three-eighths of an inch. The larva thereby is pierced, and the life certainly is sacrificed.

Neither methods occasion at the time the slightest pain to the horse, and therefore may by some persons be esteemed highly humane; but, in the end, such plans of cure prove the very reverse. In either case the maggot dies; but the business, unfortunately, is only rendered worse by killing the source of evil. The dead body putrefies. A foreign and corrupting substance beneath the skin may enlarge the abscess to many times its original dimensions. After all, the system has to cast forth the irritating matter; and for that purpose inflammation, with its attendant fever, must be perfected. Much suffering is thus occasioned, and the proprietor is, for several weeks, forced to forego the employment of a valuable servant.

The safest, the surest, and the quickest manner of eradicating these parasites is, with the point of a lancet, slightly to enlarge the central opening, and then, with the finger and thumb applied on either side of the swelling, to squeeze out the intruder. The abscess rapidly disappears; and it only requires a few dabbings with the solution of chloride of zinc, one grain to the ounce, to close the wound.

WARTS.

A wart, when of a fixed cartilaginous nature, should, in the horse, be eradicated immediately upon its appearance; being permitted to exist, such growths always increase in number and in magnitude. By certain people, or rather by a tradition, these excrescences are imagined to breed, or, it is thought, that one can produce many. That warts are possessed of any such inherent property, science refuses to acknowledge; but the same system which has generated one may generate several. The faculty of casting forth such growths may even be encouraged by allowing

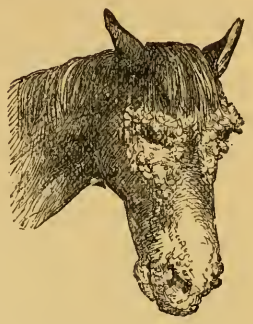
them to remain; and it is possible that the slight shock occasioned by their removal may alter the tendency of the body. Certain it is, that by some mysterious law, nature refuses to build up only for human agency to destroy. Youatt asserts that it was once fashionable to crop the ears of horses until animals were ultimately born with the ears ready shortened.

A portrait of an extraordinary instance of warty disposition, showing the imprudence of permitting such accumulations to continue, is given on the next page. The writer's experience cannot at all equal the disfigurement there represented; the animal was the favourite saddle-horse of a lady who could not bear the idea of the creature being put to pain. One wart first appeared upon the inside of the thigh; the motion of the legs used to chafe the excrescence, and frequent discharges of blood were the consequence. The growth increased in size, and three times was it "charmed." However, the cure, said to be potent over the human being, was inoperative upon the horse; housewife's remedies were next resorted to, but all of these proved equally unsuccessful.

At length, smaller warts began to show; it would have been easy to have removed the original excrescence, but the numerous after-growths assumed a form which would have rendered them difficult to destroy. Many of them came with wide bases and slight elevation; to have attempted the excision would have almost necessitated flaying of a living body. The remedy, which at first was easy, was by time rendered impossible; the horse being permitted to exist, could only see imperfectly. It could not move or feed without hæmorrhage being provoked. The animal, of course, became useless; but still, its kind mistress could not consent to its destruction. A country farrier slit up one nostril to relieve the breathing, which before was much impeded. Of course, nothing could be done for such an object.

There are three different sorts of growths, all of which are recognised under the term "wart." The first is of a cartilaginous nature, and is contained in a distinct sac or shell, which last is entirely derived from the cuticle of the skin. Upon the sac being divided, the substance drops out, leaving behind a perfectly clean cavity, which soon disappears. Little hæmorrhage and less pain attend upon this trivial operation. The second sort, also, is

cartilaginous, but, unlike the first, is not contained within a cuticular sac. It adheres firmly to the skin, and is apt to grow large; sometimes it becomes of enormous bulk, when regarded simply in its character of a wart. The crown is rough and unsightly; the body is vascular, and the growth, from its magnitude and uneven texture, is apt to be injured, when it never heals but invariably exhibits the ulcerative process in a tedious form. This species of wart is often to be found, though of a smaller development, upon the human hand. The third variety is hardly to be esteemed a true wart, and would not here be named, were it not universally accepted as one of these abnormal growths. It consists of a cuticular case, enclosing a soft granular substance.



PORTRAIT OF THE HEAD OF A HORSE WITH WARTS.

It is impossible always to distinguish the first and third from the second; therefore, in a case of this kind, it is advisable to cut into the excrescence as soon as it is large enough to be operated upon. When the warts are ascertained to be enclosed in a defined cuticular shell, the quickest and the more humane practice is to take a sharp-pointed knife and impale them, or run the blade through each in succession. The edge should be away from the skin, and the knife being withdrawn with an upward, cutting motion, the sac and substance are both sundered. This accomplished, the interior is easily removed; and all that can subsequently be necessary is to occasionally touch the part with the solution of the chloride of zinc, one grain to the ounce of water.

When the growth proves of the fixed cartilaginous kind, no time should be lost in its removal. The quickest plan (and not, perhaps, the most painful method) of doing this is by means of the knife. The excrescence should be thoroughly excised, being sundered at the base. Some bleeding will follow. This may be readily commanded by having at hand a saucepan of water boiling on a small fire. Into the heated liquid a budding-iron should be placed, by which artifice sufficient heat is obtained to stimulate the open mouths of the vessels when the instrument is

applied to the bleeding surface, without any danger being incurred of destroying the living flesh.

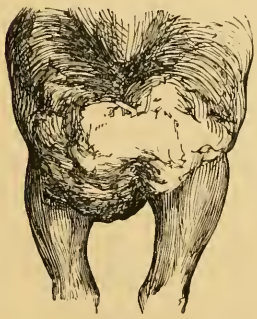
Should excision be objected to, the next best plan is the use of caustic. Strong acetic acid, only to be generally obtained as aromatic vinegar, is the mildest cautery; the next in strength is butter of antimony; after that ranks nitrate of silver, or lunar caustic; and, lastly, comes a preparation consisting of sulphuric acid, made into a paste with powdered sulphur, and applied by means of a flat piece of wood.

Whichever remedy is adopted, it must be remembered that the application will occupy time, in exact proportion to the mildness of the means employed. It may also be proper to hint to the reader that, as an animal has no foreknowledge to alarm its anticipatory fears, and as, the anguish past, the mind of the creature does not linger upon painful recollections, probably the knife is to be very much preferred.

Some people remove warts by ligatures. When the bases are pedunculated they may be used with good results, but the knife is to be preferred, because it operates at once and extirpates in a few minutes that which the ligature would take perhaps weeks to remove.

TUMOURS.

It is impossible to particularise the nature of every tumour to which the horse is subject; such formations being so very various. Seldom are two cases met with in which a precisely similar structure is developed. More seldom are two cases encountered located upon the same part. These growths are liable to every possible change. One may be very small, but extremely malignant, or of that kind which seems to resent the slightest interference. Employ the knife to this last sort and incurable ulceration may start up. All remedies may be powerless, and the life may be sacrificed. Such growths are, happily, rare in the equine species. Another shall be of such enormous size as to impede the motions, yet will be perfectly bland in its nature. A



AN ABNORMAL GROWTH UPON A HORSE'S CHEST.

portrait, not of the largest tumour, but of the most awkwardly situated, is represented in the preceding page. It was not malignant. The horse, which carried about this burden, was brought to the veterinary college some years ago. The animal had previously been under the treatment of various veterinary surgeons. All had cut and cauterised the enlargement, but without reducing its magnitude. The wounds healed quickly, and the constitution appeared not to be in the slightest manner affected.

Why was not the swelling removed with the knife, when the kindly nature of the growth had been ascertained? For good and sufficient reasons. No operation could, with the slightest prospect of success, be hazarded. In the first place, nature is apt to resent the loss of so large a substance, or, in other words, although the surgery may be perfect, the life, from some unexplained cause, is likely to depart before the operation is finished. In the next place, most bland tumours, when of magnitude, are of a semi-cartilaginous nature, and spring either from tendon or from bone—usually from the latter. This tumour impeded the action, hence it was inferred that the substance ramified among the fibres of the pectoral muscles. Those fibres are large, and are divided; they present interspaces, between which the abnormal growth might readily penetrate. Now, unless every portion of the tumour were excised, the enlargement would sprout again, and the surgeon would be disgraced. To remove the pectoral muscle of a man would be esteemed of little consequence, so that the life was preserved. But the limbs of the horse constitute the value of the creature's existence; and to disable these from being safely moved would be to return a burdensome life to the proprietor. Therefore, that which is compatible with human surgery could not be entertained in veterinary science.

A tumour may be small and soft, yet it must be respected. It may be hard, or even ulcerated and large, still its excision may be readily accomplished. The majority of these growths which appear upon the horse, however, are not malignant. Nevertheless, let every man consult some duly qualified veterinarian of experience, before he resorts to measures which, possibly, may lead to the acutest regret.

One caution must be given before the subject is concluded. Grey horses, which have grown paler with age, or have become white, are liable to an incurable and malignant disease, termed

melanosis, which hereafter will be fully described. The presence of this disorder is generally testified by the appearance of some external tumour. Unless that enlargement be of great size, and admirably situated for removal, it on no account should be interfered with. Let, therefore, every light grey or white horse, having a tumour, be submitted to some experienced judgment, and let the owner be guided by the opinion he receives.

SWOLLEN OR FILLED LEGS.

These are one of the most common troubles of the stable; the coachman is very apt to complain piteously, that in the morning he is sure to find such and such a horse with the legs filled. Commonly, the hinder limbs below the hock are thus affected; sometimes the fore legs, below the knee, will be involved. The coachman mostly bandages the parts. In mild cases, this resort

THE HORSE'S LEG OF A NATURAL SIZE.

THE HORSE'S LEG WHEN FILLED.

may answer; but in bad instances the leg above the bandage is apt to enlarge. The cloth or flannel, before applied, should be wetted; this, however, affords but a temporary relief; the wet often causes the hair to curl, and the uniformity of the appearance is thereby spoiled. After some time, the bandage frequently leaves its impress upon the leg, and it is astonishing how long, in peculiar cases, this impress will continue.

Swollen legs mostly occur in heavy animals and in overgrown carriage horses; such creatures are of weakly or soft constitutions. They have a vast tendency to become partially dropsical. Fast work exhausts the system of the carriage horse, while high food

stimulates its natural disposition towards disease. With heavy horses, the prolonged hours of labour are equally debilitating, and the Sunday's stagnation generates disorder; neither have any innate hardiness to withstand injurious influences; both, when highly fat, have the weakness inherent to their constitutions greatly increased. The quadruped, loaded with the accumulations of many months, repletion, may please the eye of the master; but it is rendered more subject to disease, and less capable of labour or of activity.

Persons who require fast work, should employ light vehicles and well-bred *small* horses; the creatures should be principally supported by grain—a little hay may be allowed during certain times, when the animal's attention requires to be engaged; but the chief sustenance ought to consist of oats or very good chaff. When the carriage is not wanted for the day, care should be taken to see the groom gives at least two hours' exercise.

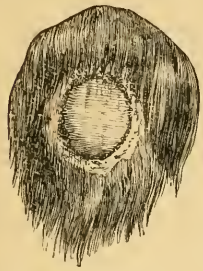
With regard to the heavy animals, the custom of blowing them out with chaff or hay is not to be commended. A good horse is surely deserving of good provender, and the best manger food is not generally deserving of any higher character than the word "good" may convey. A horse for work should be in sound flesh without being fat; when not required, it should not be allowed to remain in the stable all day.

When a horse is troubled with swollen legs, take it from the stall and place it in a roomy, loose box; nothing more quickly removes this affection than easy and natural motion. At grass, dropsy generally attacks the abdomen; but swollen legs seldom occur to horses in the field, the limbs there being in constant action. Having placed the animal in a loose box, diet as follows:—Damp the corn, mix in it chopped carrots, and in place of hay during the warm months feed upon cut grass, or turn the animal into a meadow for two or three hours daily. Particularly attend to the exercise, and should the legs still enlarge do not allow bandages to be employed, but set both groom and coachman hand-rubbing till the natural appearance is restored.

SITFAST.

This, whenever it occurs, provokes great vexation. Generally, it affects animals of the highest value or of fast capabilities, which

are used only for saddle purposes. The affection consists of a patch of horn, resembling a corn upon the human foot. These patches are not absolutely large, though of course in size they vary. Neither are they all similar in form nor in thickness. In one respect, however, a family likeness runs throughout the kind. They are not simple corns, but their different nature is shown by a margin of ulceration. The situation which they invariably occupy is under the saddle tree. Their presence, of course, obliges the horse to be disused, and they are the more annoying since there is no chance of these comparatively trifling ailments disappearing without treatment. The treatment, moreover, cannot be speedy. Whatever measures may be resorted to, time is necessary for the cure; and, during this space, the proprietor sees his horse in high health and spirits, but is forbidden to mount it because of a petty blemish, which, in his eyes, is perfectly contemptible.



A SITFAST AS IT APPEARS UPON A HORSE'S BACK.

Sitfasts, though all said to be caused by the friction of the saddle, have several distinct excitants. The saddle is without life, and cannot of itself injure the quadruped. It is common to account for a sitfast by saying the saddle does not fit. Such may occasionally be the case; for a saddle, if badly made, will chafe the skin and produce a sitfast. But this cause is in operation less often than is imagined. A retired surgeon, whom the author had the honour of visiting at Reigate, wore a cork leg. That gentleman stated, that whenever the leg use to chafe the stump to which it was attached, he always considered his body was out of order. Medicine then was taken, and the symptom disappeared. We mortals refuse to think the horse ails anything, unless the animal is alarmingly prostrated. All smaller ills are disregarded; yet that derangement of the stomach, which caused the stump of a man's leg to become painful from pressure, may, if not attended to, also cause the skin of a horse to exhibit a sitfast.

An awkward horseman is the more frequent source of the complaint. There are gentlemen so very energetic as riders that the best of saddles may be readily moved under them. The saddle must be well made indeed, which can, under no circumstances, be

stirred upon the back to that extent which is required to generate a sitfast. Loose girths will likewise establish the nuisance, and so also may the saddle cloth, whenever it is hastily put on, so as to become thrown into a fold, when the horse is mounted.

The speediest cure for a sitfast is the knife. The excresence is quickly removed, and the wound, if treated with the solution of chloride of zinc, one grain to an ounce of water, soon heals. A more tedious plan of removal, and one not recommended by any proper feeling, is to rub into the sitfast, every night and morning, a small quantity of blistering ointment. Such is the usual direction; but the ointment may be applied, for some time, to a layer of compact horn, before the true skin or flesh beneath is affected. The unguent must therefore cover the perhaps ulcerated margin of the sitfast; and even then it is a tedious and a painful operation, not likely to improve the disposition of an animal, which it is so desirable to keep free from every excitement.

While the sitfast is being operated upon, the bowels should be rendered pultaceous, by bran mashes. Four of these per diem will usually loosen the most constipated body in two days. That effect being gained, while the food is liberal and the animal is led to plenty of exercise, give one of those drinks night and morning, which are tonic to the system, but seem to exhaust their virtue upon the skin.

Drink for Sitfast.

Liquor arsenicalis	Half-an-ounce.
Tincture of muriate of iron .	Three-quarters of an ounce.
Water	One pint.

Mix, and give.

"To prevent is better than to cure," and more than half the diseases which have and are to be mentioned in this work, might by a due observance of hygienic laws, be prevented; and in the case of sitfast it has been shown how the collar, saddle, etc., at times injure those parts with which they come in contact; therefore, by the removal of pressure or mechanical interference, friction, the cause of producing injury, will cease to exist. Persistent pressure and friction of the collar pad, etc., will produce congested spots which ultimately degenerate into fistulous sores and sitfasts; this proves that the harness is at fault. To remedy these evils collars have been

eased, the stuffing has been so arranged as to form a bridge over the injured part, and various appliances, such as false collars, etc., have been requisitioned so as to protect horses' shoulders from further harm. These act well sometimes, but are not to be depended upon in all cases, and it was owing to this fact that the inventor of the Alpha Horse Air Collar brought out his patent, one which will prove a great boon to horses and owners alike. This company make saddles, collars, and pads; these require no stuffing to form cushions for adaptation to the necks or backs, but are inflated with air like a balloon, which works with ease over the subjacent skin, and adapts itself to the various muscular movements of the parts upon which it rides. These collars, etc., are made for all kinds of horses, from the eleven-hands pony to the seventeen-hands cart-horse, and they are stronger and better made than the old-fashioned collar; air fills the place where stuffing formerly existed, weight is removed, and a great desideratum is obtained. "The Alpha Patent Horse Air Collar Company," Charing Cross Road, London, deserves the thanks of horse-owners, for they have brought out harness appliances calculated to protect from injury the various parts of the body to which they are fastened, and in so doing prevent the primary cause of sitfast, or of any other similar malady.

GREASE.

This filthy disorder is a disgrace to every person concerned with the building in which it occurs; it proves neglect in the proprietor, want of fitness or positive idleness in the groom, and culpable ignorance or the absence of the slightest moral courage in all people entering the doors of the stable. It is one of those disorders which it is easier to prevent than to cure. By an ordinary regard to cleanliness and by an average attention to the necessities of the animal, this taint may be avoided. Wherever it is witnessed, it not only argues the human being to whom the building belongs to be in the lowest stage of degradation, but it also testifies to the sufferings endured by the poor creatures which are compelled to drag out life in such custody.

The grease is, in the primary instance, inflammation of the sebaceous glands of the legs; but it soon extends beyond the limits of its origin, and involves the deeper seated structures. The fore-

legs are seldom affected with this malady; it is consequently for the hind limbs that medical treatment usually is required. The reason of that exemption is found in the greater proximity of the anterior extremities to the heart or to the centre of the circulation. Consequently, the vitality in the fore legs is more active, and the flow of blood much more energetic; hence, the anterior extremities can resist that ailment which fixes with impunity upon the posterior limbs. Added to this, in the fore legs the vessels describe almost perpendicular lines, whereas, in the hind members, the arterial current is impeded by numerous angles: these conditions, doubtless, operate upon the health of parts. But, above everything else, ranks the fact that the front legs are not subject to the same external causes as are the members more backwardly located. The stalls are drained from the manger to the gangway; consequently, all the contamination of the space in which the horse is confined, flows towards the hind feet. There are, moreover, other reasons, which the intelligence of the reader will not require should be particularised.

Grease is banished from every decent stable; it may, however, be occasionally encountered in situations very much secluded; there yet remain places whence so foul a disgrace is never absent. The wretched animals which are employed in brick-yards, in dust-carts, and in drawing canal boats, are hardly ever free from this loathsome disorder. These creatures labour incessantly, and are removed far from the wholesome check which brutality receives from public opinion; they are resigned to the mercies of men, who, as a class, are certainly not the most refined, and are seldom inconvenienced by any excess of feeling. The places, not stables, into which the miserable quadrupeds are thrust, can rarely be entered without the peculiar smell, which announces the existence of grease, almost overpowering the stranger. The fact is unpleasant to human sense; but it is only right that the probable effect upon the creature, which is doomed for the duration of its weary life to inhale such an atmosphere, should be considered.

Smell is, perhaps, the most acute sense with which the equine race is endowed; the horse can appreciate that in which the human being vainly endeavours to detect even the slightest odour. Not only is the scent far more acute than that of man, but the two beings have to be compared as regards their habits; the animal

is more cleanly in its tastes. Flesh it abhors, and all fatty substance it shrinks from; men eat such things with appetite. Then, the human subject can dwell and even labour in a tainted atmosphere with comparative impunity. A quadruped may be forced to toil in such a place, but those who oblige the creature to this kind of work know the certain consequences of the act. They buy cheap and old horses—animals which have suffered much, and have but a year or two longer to exist. Were younger or dearer quadrupeds purchased, in which an energetic constitution would render disease more malignant, and were such animals obliged to breathe such contamination, the loss in every way would be fearful.

There is, at present, a great fuss made about sanitary laws; but the attention of those to whom such subjects are confided seems to be engrossed by man and his excretions. No one yet appears to have imagined that the subject involves life in all its varieties; the horse cannot exist in the air which human lungs have exhausted; man cannot live in the atmosphere in which the horse has perished. The two creatures are not, therefore, entirely distinct; but the open nostrils and huge lungs of one horse can consume the oxygen which would support many men. Then the dung of the horse, which is always exposed, gives off fumes only slightly less dangerous than those which emanate from the human body. Yet officers pry into alleys and into courts; they enter the habitations of the poor, and count the number of those who *sleep* in each room. The impacted people are pointed to as the source of certain diseases, and society shudders as the medical report is circulated. No one, however, visits the stable; no one inquires whether horses *live* in the space which affords sufficient atmosphere to support existence; no one has yet traced disease in man as probably originating in the close and contaminated fumes of nearly every London mews. Still, if the over-crowded rooms of the poor merit an elaborate report as so very dangerous to society, may not the stifling and reeking condition of the stables deserve a passing comment in its relation to the same effect?

Cutting the hair from and thereby exposing the hinder heels to the operation of cold and of wet, is no unfrequent cause of grease. Such is a common practice with lazy horsekeepers, when not stimulated by the proprietor's eye. In winter, when the legs

most require warmth and protection, the heels are deprived of the covering which nature intended should protect them; and parts where the blood flows most tardily are laid bare to the effects of evaporation and of frost. When the animal returns soiled from work most grooms will sluice a pail of cold water over the legs; the dirt is thereby washed off, but the legs are suddenly chilled and soon become more cold, because of the moisture which they retain, and of the evaporation which ensues; for very few stablemen, finding the appearance pleasing to mortal perceptions, think about the comfort of the creature which is principally concerned.

Sudden chill striking a part and followed by gradually increasing cold will certainly induce congestion; the foundation of disease is thus laid. The better plan would be, to instruct the groom that appearance is secondary to the welfare of his charge. Order the man not to mind about leaving his horses so very clean and tidy; never allow the hair, which grows long and luxuriant about the heels, to be cut off. Leave strict orders that, when the animal returns with dirty legs, the stableman is to take several wisps of straw, and rub them until the surface is quite dry. The absence of wet will greatly add to the comfort of the horse, while the friction will increase the circulation, and prove the very best preventive to disease. With the moisture, of course, much of the dirt must be removed; any which is left behind will readily fall out on the following morning upon the hair being carefully hand-rubbed and combed.

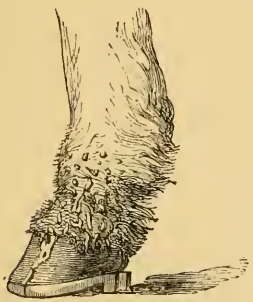
A HORSE SCRATCHING ONE LEG WITH THE OTHER FOOT; A SYMPTOM OF THE EARLIEST APPEARANCE OF THE GREASE.

The earliest symptom of approaching grease is enlargement of the legs, accompanied by considerable heat of the skin. If the animals be now observed they will be seen to be uneasy in their stalls; the hinder feet are occasionally noisily stamped upon the pavement. Should the hair be examined, it will be discovered loaded with scurf about the roots; while one hind foot will be frequently seen employed to scratch the back of the opposite leg.

Should these indications attract no attention, the hairs soon

begin to stand on end, or to project outward, as though each was actuated by a separate purpose, and each desired nothing so much as to avoid its fellows. At the same time, the part begins to exude a thick unctuous moisture, from which the disease derives its name. This hangs upon all the hairs of the heel in heavy drops. It is an offensive secretion. It emits a remarkably pungent and a very peculiar odour, which, once inhaled, is never afterwards to be forgotten.

Should no regard be now bestowed upon the sufferer, and should the horse be worked on despite the lameness which it now exhibits,



FIRST STAGE OF CONFIRMED GREASE. EXUDATION.

THE SECOND STAGE OF CONFIRMED GREASE. CRACKS.

the skin swells, while cracks, deep and wide, appear upon the inflamed integument. The lines of division ulcerate, sometimes very badly; a thin, discoloured and unhealthy pus mingles with the discharge; the odour grows still more abominable, while the wretched animal becomes yet more lame.

THE THIRD STAGE OF CONFIRMED GREASE. HORNY BUNCHES, WHICH ARE COMMONLY CALLED GRAPES.

Should, even at this period, no proper remedy be applied to check the disease, the leg enlarges; proud flesh, or fungoid granulations, sprout from the lines of ulceration. The granulations grow in bunches, and have a ragged surface. Often the masses are of great size, and shake as though about to fall with every movement of the foot. The points, from exposure, become dry and hard; their nature, from that of fungoid granulations, changes to a substance resembling horn, like which they are, without sensation.

These bunches have been named "grapes," which they are vulgarly thought to resemble. The likeness, however, is very distant; the one being pleasant to look upon, the other forming a painful and disgusting spectacle.

However insensitive the points of the bunches may become, the limb itself, throughout the disorder, possesses a morbid sensibility. The gentlest touch occasions exquisite torture, and the animal will tremble lest the agony should be repeated. Upon the slightest impression, the leg is instantly snatched up; nor is it trusted again upon the earth until fatigue necessitates rest, or till the cause of suffering has departed. Few greasy animals ever have a bed under them, the straw of which might arrest the liquid in its flight. Indeed, such a luxury might save them from one source of torture, but assuredly would start up another. The ends of the straw, pricking or even touching the disorder, would cause such agony as must occasion the animal constantly to stand in terror.

One peculiarity, witnessed during grease, has not been indicated in the above illustrations. It has been purposely omitted; because, though invariably attendant upon the disorder, it in reality forms no part of the malady, being only a sympathetic effect. The cutis is continuous with the coronet and lamina, which secrete the outward horn of the hoof. Any disease fixing upon the one, of course cannot but affect the other. The irritation, which involves the skin of the leg, therefore, necessarily stimulates the growth of the foot. The hoof of a greasy leg, from this cause, often becomes of enormous dimensions; but this peculiarity has not been noticed, because it was desired to keep the attention of the reader fixed wholly upon the more immediate symptoms of the loathsome affection.

The remedy for grease is simple enough. Indeed, did not a sense of duty oblige it to be resorted to, the smell would, in the majority of persons, induce it to be employed. In the first place, clip off the hair, if any remains to be cut off. The natural protector of the heels now can conserve nothing. It can only heat the skin and retain the discharge. This being accomplished, if the leg merely be hot and scurvy, have it thoroughly cleansed with soft soap and warm water. Afterwards, carefully wash away all the soap, and dry the part with a soft rubber. Then apply a lotion consisting of—

Animal glycerine	Half-a-pint.
Chloride of zinc	Half-an-ounce.
Water	Six quarts.

This should be effected by well saturating a cloth with the lotion, and surrounding the inflamed integument with it. This should be removed so soon as it becomes warm, and another, also dripping, should immediately supply its place. Thus a wet, cold cloth should constantly cover the part till the heat is destroyed, or at all events is greatly mitigated. When the part is reduced to a somewhat natural temperature the treatment consists in renewing the cloths saturated with the lotion so often as the heat returns.

When the cracks, with ulceration, appear, the previous lotion is too weak to be of much service; but the same treatment must be adopted, only one of the lotions subsequently given should then be used:

Lotion for the ulcerative stage of Grease.

Permanganate of potash or phosphoric acid	One pint.
Water	Six quarts.

Or,

Chloride of zinc	One ounce.
Creosote	Four ounces.
Strong solution of oak bark	One gallon.

Both to be used after the manner of the previous solution.

Should the spurious granulations have began to sprout, lose no time in having the horse cast. Have near at hand a small pot, with a charcoal fire beneath it. Let the vessel be full of boiling water. Within the fluid, previous to the casting, insert several irons; then throw the animal. With a keen knife, excise the external bunches of proud flesh. As each lump is removed, much bleeding will ensue; therefore, before using the knife again, take an iron and lay it flat upon the raw surface. Should one not check the hæmorrhage, return the first to the saucepan, and apply a second. If the growths are extensive or numerous, it will be wise not to remove them all at one operation, but extirpate as many as the operator may think consistent, when taking into consideration the age and condition of the animal under his knife.

If a second operation be deemed advisable, the animal should

be well fed during the intervening period, and the parts should be dressed with the chloride of zinc lotion, as before prescribed. After a week's time the horse may be cast a second time, and all the growth can be removed.

The after treatment will depend much upon circumstances. If the ulceration predominates, employ the last lotion. Should the granulations appear likely to grow make use of the first solution of chloride of zinc, only it should be double the strength which was originally recommended. When both ulceration and granulation appear equal, the first and last lotions may be alternated.

Such are the chief remedies necessary for the cure of grease. The other measures are, the removal to a loose box, thickly bedded with refuse tan; the food should be liberal; each feed of oats should be rendered damp, and a handful of ground oak bark ought to be thoroughly mixed with it. For medicine, those excellent tonic and alterative drinks may be thus prepared, and given daily:—

Drink for Grease.

Liquor arsenicalis	One ounce.
Tincture of the muriate of iron	One ounce and a half.
Porter or stout	One quart.

Mix. Give one pint night and morning.

Chopped roots, speared wheat, hay tea, and a little cut grass, should it be in season, are all proper in this disease. At the same time, walking exercise is much to be commended. Motion quickens the circulation; but in grease it seems in a manner, which is not understood, also to allay pain. A horse having grease will be led out of the stable limping lame; but after an hour's exercise it may return walking firmly and almost soundly. After cleanliness, good food, and medicine, nothing is so beneficial to grease as moderate exercise, which cannot be better obtained than by a turn-out to grass in good pasture during the warm months, as it necessitates natural motion, and removes the animal from the baneful influence of impurities, and places him amidst healthy vegetation and pure air.

MALLENDERS AND SALLENDERS.

These names are to be traced to no derivation, but in their arbitrary signification they denote a certain condition of the parts,

situated on the points of principal flexion in either limb. Mallenders appear upon the back of the knee; sallenders are located in front of the hock. Both, in the first place, are scurfy patches, exhibiting a roughened state of hair and suggesting considerable irritability. Either, if neglected, will degenerate into a troublesome sore, from which a foul discharge will issue. With ordinary care they neither do much harm, but are regarded as proofs of idleness,

MALLENDERS, OR A SCURVY PATCH AT THE BACK OF THE KNEE.

SALLENDERS, OR A SCURVY PATCH IN FRONT OF THE HOCK.

and as eyesores, than as actual diseases, to which importance they now seldom attain. For their relief, it is essential to pay scrupulous attention to cleanliness, as, when the coat suffers from neglect, it is very probable the same cause may likewise influence the constitution. Therefore always begin the treatment with the tonic alterative drinks, described on the previous page; at the same time applying with friction a little of the annexed ointment, thrice daily :—

Ointment for Mallenders and Sallenders.

Animal glycerine . . .	One ounce.
Mercurial ointment . .	Two drachms.
Powdered camphor . .	Two drachms.
Spermaceti	One ounce.

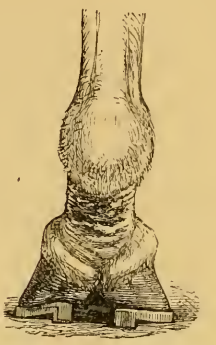
Incorporate all thoroughly together, and apply as directed.

When the scurf, through neglect, degenerates into a sore, treat after the manner subsequently advised for cracked heels.

CRACKED HEELS.

This is produced by the unwise treatment men adopt of denuding their horse's legs of their natural protection—the hair—during

the cold and wet months of the year. The fetlocks are thus exposed to the inclemency of the weather, when too rapid evaporation from the heel is favoured, and congestion of the part supervenes, which terminates in cracked heel.



THE HEEL OF A HORSE IN A CRACKED CONDITION.

The liability, induced by removal of the natural covering, exemplifies the folly of those practices, which have lately become so very fashionable, as at the present time to be almost universal. But there has always appeared to exist in the human mind a restless desire to improve the beauty of the horse. Now, the tail has been docked; then the ears have been cut. A short space prior to these amendments the skin was tampered with to produce a star, as a white spot upon the forehead was termed. At the passing hour almost every man who owns a horse must have the body clipped or singed. The length of hair is given in this climate as a necessary provision. Nature never forms anything without its use, though man, in his ignorance, may not always be able to comprehend her intention. Were finer coats desired it would probably be wiser to obtain them by warming the stable, increasing the clothing, and avoiding those long stagnations during which the animal has to remain motionless before street doors. A long coat is a defence against a cold winter, and unless man provides against the consequences of our climate, it is evidently flagrantly wrong to deprive a dumb creature of the protection which nature has bestowed.

Shortening the coat, if anywhere justifiable, is certainly most pardonable amongst hunters. Animals, used for this purpose, always have, or should have, plenty of attendance; these creatures also, are mostly required during the autumn and early winter. Removing the coat certainly does stimulate the body. The horse, assuredly, is capable of greater exertion immediately after the deprivation. At the same time, however, a greater susceptibility to disease is engendered, and often the deprived animal falls a victim to man's fancy, notwithstanding all the care and attention which the hunting stable can command. A burst and then a check, when a piercing wind blows from the north-east, invariably

produces sad effects among the horses, especially at the commencement of the season. A gentleman, who prizes the animal he rides, should take it to "the meet" unclipped; and, perhaps, should the run be long, the quadruped may hold a better place at the death than horses adorned after the prevailing fashion.

The folly of the custom is shown in the animals attached to London vehicles. These horses are mostly wanted for spring service. The stimulant of the autumn is purchased at the cost of debility during the spring. The coat is shed the later, because of the previous deprivation. When the summer hair is growing, the creature presents a very uneven and ragged appearance, in consequence of the points of the new and the roots of the old coat being of opposite colours. The gentleman (who, therefore, has his nag and carriage horses shorn of their natural coverings) at the time when hunters are thrown up, beholds the objects of his pride deficient in animation and beggarly in aspect, while the animal that has been allowed to wear its native garments dashes past him in all the briskness of the season and the smartness of new apparel.

The question of clipping and of singeing is simply this. Do you require your servant's services all the year round, or do you want its utmost exertions for a comparatively short space, immediately subsequent to the removal of the outer hair; and, at how great a hazard are you prepared to purchase your wish?

Were the legs of horses allowed to retain that adornment which nature gave, and were the parts not shorn of their shaggy beauty; were men not inclined to confound the different breeds of horses, and, because the thorough-bred has clean legs, to imagine the cart-horse can be artificially made to display members equally fine; were masters more resolute in resisting the selfish suggestions of lazy grooms, who love to have the bushy heels clipped; were the stable-keeper not afraid of doing his duty, but would go down upon his knees and rub the fetlocks dry, instead of drenching them with water, and then leaving them to chap in moisture and in cold;—were these things attended to, there is no reason why cracked heels should not speedily become a thing which has been but no longer is.

For cracked heels, if bad, the animal must rest, at all events, till the parts are improved. When slight, always wash them with

tepid water and mild soap, upon the animal's return to the stable; dry them thoroughly with a soft leather; then damp them with the following:—

Wash for Cracked Heels.

Animal glycerine	Half-a-pint.
Chloride of zinc	Two drachms.
Strong solution of oak-bark	One pint.

Dissolve the zinc in water, then mix, and use thrice daily.

Should sloughing and ulceration have commenced, that condition claims the first attention, as being the most dangerous.

Forbear all exercise while such a state exists. Throw up the animal. Allow it to rest in the stable. Give a few bran mashes or a little cut grass if this malady occurs during the summer, if in the winter a few carrots to open the bowels; but do not take the horse out, even for exercise, while such an unhealthy action is in existence. Ulceration is too dangerous and morbid a process not to be treated with every consideration; and it is far too irritable and painful a state not to necessitate perfect inaction for its relief. Apply the following to the heels:—

Wash for Ulcerated Cracked Heels.

Animal glycerine or phosphoric acid . .	Two ounces.
Permanganate of potash, or creosote . .	Half-an-ounce.
Water	Three ounces.

Mix, and apply six times, daily.

Upon the ulceration being arrested, the last prescription may be discarded, and the former recipe resorted to. With these, however, it is always well to attend to the constitution. A drink, each day, composed of liquor arsenicalis, half-an-ounce; tincture of the muriate of iron, one ounce; water, half-a-pint, should be given every night. This composition has been often recommended, but the author knows of none which is more beneficially tonic to the general system, and which, at the same time, acts so directly upon the skin.

Stable-men are fond of urging various excuses to hide their disinclination for exertion. Thus, it is common for such people to assert that the horse's heels cracked while the animal was out, on a cold, a wet or a windy day: this is nonsense.

Were not the heels clipped, nothing short of extreme stable-neglect could occasion those parts to crack. If the hair is removed, nothing but excessive good fortune will prevent this affection. The groom, in the last case, is not to blame, should the heels become sore. However, the best method of avoiding this affection, where the hair is cut short, experience has proved to be the following:—Upon return to the stable, wash the feet scrupulously clean with tepid water; then dry them thoroughly. Use several cloths to affect the latter purpose, and do not relinquish the object, while the slightest moisture remains; and afterwards surround the legs with flannel bandages, and allow them to remain on for two hours.

CHAPTER XI.

SPECIFIC DISEASES—THEIR VARIETIES AND THEIR TREATMENT.

BROKEN WIND.

Broken wind in the horse approaches very near to dry asthma in the human being. Man, however, can suit his work to his

CONVULSIVE SPASM, INDUCED BY FATIGUE IN A BROKEN-WINDED HORSE.

capabilities; but all horses have only one employment, which, to be sure, may differ in its intensity; still, the most afflicted animal always has to perform the severest kind of draught. Let any person propose that individuals, having dry asthma, should pull loaded trucks to earn their bread, or to purchase a right to live; the cruelty of such a proposition would be apparent to the dullest sense. Yet is it the horse's doom that, no matter with what

disease it may be afflicted, the animal must work or die. Old or sick, weak or disabled—still, the body's toil must earn the creature's food and the master's profit. Spasm or agony can excuse no pause; let the sufferer even slacken the pace sufficiently to mitigate in some degree the pangs it endures, and the long whip, aided by the harsh voice of the driver, will urge the flagging cripple onward. The horse has no words to plead with; the signs of its distress are not understood; the law which assumes to protect it is a delusion; the animal is given up helpless, friendless, and unpitied to the almost unrestrained barbarity of its master. It is born doomed to live in solitude; to wear its life out under the goad, and to yield up existence in a knacker's yard.

"Broken wind" is a sad affliction; it is the more sad, because no men, but the very careless or the very poor, will keep an animal thus diseased. The malady is usually witnessed after the adult age has been attained, or during the latter period of life.

It is said to have been produced suddenly. Thus, a man has been reported to have ridden an untrained horse after the hounds, and so have provoked the disorder. Another is asserted to have galloped a nag with a stomach loaded either with food or water, and thus to have broken the wind. Doubtless, the seeds of the disorder may by either process have been sown; but that the disease was fully developed after either incident is more than doubtful.

The seat of this affliction is not confined to any one organ; its ravage is universal. No part escapes. That the entire animal economy can change all at once, like a trick in a Christmas pantomime, is a circumstance which has yet to be established. The malady is most general among the agricultural districts; the farmer's poor team in many parts of England seldom taste much of that which can be taken to market. Cut grass constitutes its chief summer food; the coat is rarely groomed; the stable often left open, and only cleaned when manure is wanted. During the winter months the animals have sometimes to luxuriate in the straw-yard, where bad hay may be given, or at any rate that which is not considered good enough to sell. Such food may sustain life, but cannot support strength, and consequently general bodily degeneration is induced.

"Broken wind" comes on insidiously; is of slow and long growth;

any abuse may lay the foundation of such an affliction. Where abuse of life is possible, there folly is too often habitual. Thus, repetition may hasten the development of broken wind, but no one act could provoke so lamentable a consequence.

There is some dispute whether "broken wind" originates in the stomach or in the lungs. The mass of evidence would favour the opinion that originally it was a disease of the digestive organs; but, as the disorder proceeds, all parts of the body appear to be involved.

The symptoms of "broken wind" are a short, dry cough, which is described as "*hacking*." It arises from irritability of the larynx, the mucous membrane of which is directly continuous with that proper to the lungs, and is joined to that of the stomach, any disease of which organ is frequently accompanied by cough.

The appetite is ravenously and unscrupulously morbid; the thirst is insatiable; the flatus is most abundant; the food is but half digested; the abdomen is pendulous; the coat ragged, and the general aspect dejected.

The leading symptom, or that which is looked for as indicative of "broken wind," is found in the breathing. Respiration is accomplished by a triple effort; inhalation is quick and single; expiration is slow and double. The air is drawn upon the lungs as by a gasp. This being quickly accomplished, the ribs commence to expel the vapour, and move laboriously to their utmost extent without being able to effect the purpose. The movement of the chest and the inhalation are counted as two efforts. Then ensues the third. The abdomen begins to rise, with an evident desire to aid in emptying the lungs, by driving forward the diaphragm and thereby diminishing the capacity of the thorax. These two last efforts are comparatively laborious; but the double effort is only partially completed, before a sense of suffocation forces the animal to gasp once more for breath.

There certainly are several circumstances which favour the opinion that "broken wind" is a disease of the digestive organs. In the first place, the great majority of broken-winded horses are to be found in those stables where the animals are badly fed; moreover, it is no unusual thing for a gentleman to turn his nag out to grass, or into the straw-yard, and to take it up "broken-winded." Then, again, low dealers who frequent fairs and public-

houses, have a method of what they term "setting broken wind." This consists in pouring into the stomach various substances, which cause the indicative symptom of the disease to be for a time concealed. Grease, tar, shot, and many filths are used for this purpose; anything which seems to induce nausea appears capable of producing such an effect. These things may conceal, but they cannot destroy the characteristic cough; a copious draught of cold water, by refreshing the stomach, will induce the restoration of all those signs natural to the disorder.

For "broken wind" prevention is far more easy than cure; in fact, the utmost which science can at present accomplish is to relieve the distress. To effect this, water should be given constantly, but never immediately before or after work, and in order that necessary system may be observed, it will be well to keep the water always in the trough at the side of the manger.

Besides this, allow crushed oats and carrots well soaked, five feeds each day, with only five pounds of hay; two pounds in the morning when being dressed, and the remainder in the rack at night. All food should be well saturated with water previously to exhibition, and a lump of rock salt can be placed in some convenient place in the stable for the horse to lick.

All other recommendations rather concern the owner than the stable. A horse thus afflicted should never be pushed hard or called upon for any extraordinary exertion. Fatigue, when severe, is apt to provoke alarming spasm, which has been known to terminate fatally.

After death the body which has suffered from the disease declares the ravage of the malady; the lungs are larger than usual, and always pallid. Small bladders containing gas are sometimes met with upon their surfaces; and when taken from their cavity the organs do not collapse as do the healthy lungs, nor can the air by compression be entirely driven forth. The hand being forced upon the surface elicits crepidation or provokes a crackling sound, induced by the vapour passing out of one cell into another; for "broken wind" causes the terminations of the bronchial tubes to give way or to freely communicate one with another. Now, it is within these air cells that the blood absorbs the oxygen from the inhaled atmosphere, and purifies itself by yielding up carbonic acid. How much must the destruction of their integrity, there-

fore, affect the entire body? Impure blood cannot nourish a healthy life; and the reader, after the above explanation, will easily account for the ragged and dejected aspect of the horse with "broken wind."

The diaphragm is also disintegrated; the fibres of its tendonous portion are separated. The stomach is distended and thin; the bowels are enlarged and blown out with gas; the muscle of the anus is flaccid; the visible mucous membranes are of an unhealthy tint; the lining of the windpipe and the bronchial tubes are greatly thickened; the muscles are soft and deficient in colour; and where fat should have been is found only a gelatinous fluid.

Having related the living and the morbid changes which characterise the malady, it remains now to inform the reader how so terrible a scourge may be avoided. Never, for cheapness, buy damaged provender; never load a famishing stomach; be generous in all provision for those creatures which devote their lives to your service. Never allow your horses to be galloped at racing pace by your servants, excepting when you deem it wise to do so for some express purpose. Be very careful that water is always before your horse, and damped food is at all times presented to him. Never suffer an animal to quit the stable soon after it has eaten. Be very attentive to all coughs; accustom yourself to the sound of the healthy horse's windpipe, that, when the slightest change of noise indicates the smallest change of structure, you may be prepared to recognise and to meet the enemy before disease has had time to fix upon the membrane.

HOW TO HEAR THE SOUND MADE WITHIN THE HORSE'S WINDPIPE.

MELANOSIS.

A quantity of black deposit, accumulated in large quantities upon certain parts of the frame and contained within an increased amount of cellular tissue, constitutes this disease. At an early period swellings may be detected externally; they may be as small as

a millet seed, or as large and round as a plate. These may remain dormant for years, or if cut into before they start into activity are almost white, and very glistening in parts, much resembling cartilage.

A MELANOTIC TUMOUR DIVIDED, SHOWING THE INTERIOR IN THE MIDDLE STAGE OF DEVELOPMENT.

As time progresses, however, all the white disappears, and its place is filled with black pigmentary matter. These growths increase both in number and in size. Should one be cut into, after it is fully matured, an inky fluid follows the knife. The disease is more common to white horses than those of any other colour, and the tumours are usually found in abundance upon and around the anus. It is not, however, simply confined to external

THE SPLEEN OF A HORSE LOADED WITH MELANOTIC TUMOURS. THE BLACK SPOT TOWARDS THE RIGHT HAND REPRESENTS ONE OF THE GROWTHS DIVIDED.

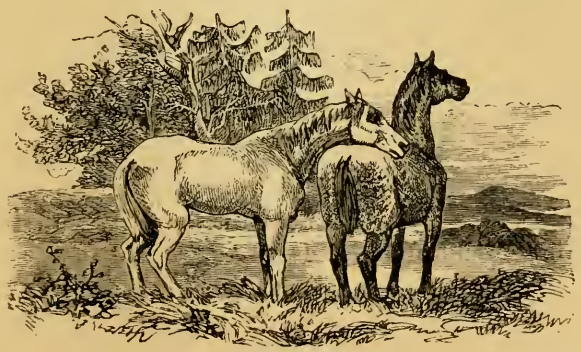
tumours; the coverings to nerves, the coats of arteries, and the recesses of the closest bones, are each found to bear minute evidences of a melanotic tendency. The deposit, however, seems principally to attack the internal organs. The interior of the sheath is not unfrequently clogged to that degree which forbids the passage of the natural emission; while the preceding engraving of a loaded spleen by no means represents an extreme case.

A melanotic tumour is malignant—that is, if once removed, it may recur, and for this reason no benefit is likely to arise from operation. Our present knowledge points to no medicine which can prevent or disperse such deposits, and the tumours appear to resent the slightest interference. The integrity of one swelling being violated, seems to start off the disease with enraged intensity. If let alone, melanosis may exist for years, and cause little inconvenience to the body in which it resides.

Above all, let the master not permit any man to blister, seton, rowel, fire, stimulate, or slough out the tumour; such deeds are cruel folly. Bleeding is worse than useless. Purging weakens the body which disease is sapping. All medicines used in ignorance are probable hazards. Let such things, therefore, be discarded; but, if something must be done, let the animal have daily an eight-ounce dose of any bland vegetable oil. Some linseed may likewise be mingled with the corn, or a decoction of the whole linseed may be presented as drink, before the seeds themselves are given with the oats.

It is but natural to connect melanosis with the changed aspect of the skin; for it is common to the grey horse, not during the time his coat is of a dark appearance, but when his hairy covering has become nearly white, owing to the pigment having ceased to supply its black colour to the skin. From this it would appear that a tendency existed, as age advanced, for the pigment to concentrate upon itself in circumscribed spots, and in so doing to establish the commencement of melanosis.

When these tumours occur they should be kept as clean as possible and washed daily with tepid water. No application of any kind seems to avail; indeed, washes have been used which irritated the affected parts, and have operated injuriously.



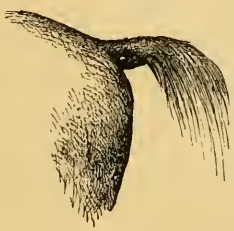
THE COLOURED HORSES WHICH ALONE ARE EXPOSED TO MELANOSIS. TO THE LEFT IS THE OLD HORSE WHICH HAS BEEN GREY; TO THE RIGHT IS THE YOUNG ANIMAL, WHICH WILL WITH AGE BECOME WHITE.

When melanosis threatens, a tumour no larger than a wren's egg generally appears upon some part of the body. It may show on any locality. It has no fixed abode. It is hard to the touch, and apparently devoid of sensibility. In this state the disease may

remain for one, or it may continue stationary for six years. When the next and the more active stage commences the tumour suddenly enlarges. It becomes soft in places, and will fluctuate under the pressure of the fingers. The horse at the same time grows slothful. The tumour, which previously seemed in no way to affect the animal, by its enlargement marks the departure of all spirit. This sluggishness rapidly increases, till the poorest owner becomes dissatisfied with the perpetual use of the goad.

The body, when opened, generally displays a condition which, from the outward signs, was far from expected. The internal organs are covered with tumours. Numberless morbid growths, of various dimensions and in every stage of development, crowd upon every part. These readily account for that disinclination to move, which characterised the latter days of existence.

There is one test for melanosis which does not invariably meet with a response, but which, when successful, seldom deceives. This is a pimple near to the root of the dock; it is very rarely of magnitude; there may only be one, or there may be several, and the largest may not exceed the dimensions of half a pea. When, however, such an indication can be detected upon a grey horse which is turning white the evidence is almost conclusive.



THE SIGN THAT TELLS OF THE EXISTENCE OF MELANOSIS.

The ultimate termination of this disorder is not known, as horses thus affected are always slaughtered, when the second stage interferes with their utility; but, judging from the similarity of the disease in man and in the animal, it is conjectured the last stage would in each be alike.

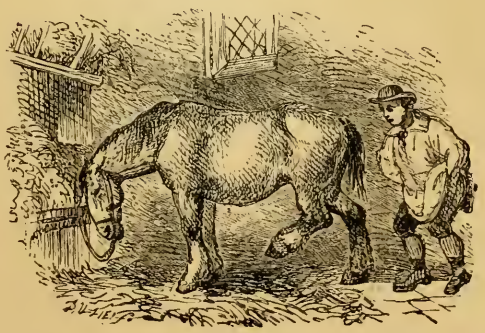
WATER FARCY.

Water farcy, like so many equine disorders, is the offspring of weakness, and is the result of a debilitated system, induced by too excessive labour and old age, and is a warning which nature gives to human selfishness. It is, when rightly viewed, an intimation, that, if the owner does not use the life entrusted to him more gently, the common Parent will speedily take the sufferer to its rest. The

complaint proceeds from constitutional weakness; should the cause of exhaustion be continued, the affection soon changes its character. Water farcy is dropsy of one hind leg; very rarely does the malady involve two members. Such is the form of the admonition; but the labour undiminished, or the dropsy removed by means of coarse and drastic medicines, the local affection speedily becomes a constitutional disorder; and true farcy releases an ill-used slave from custody of the tyrant who has abused his power.

Horses that are liable to water farcy are mostly of the heavy breed, or are animals which perform slow work. It is usual on a Saturday night for the driver to throw much provender before such creatures, and then to lock the stable door, satisfied he has discharged his duty.

Often, he does not visit them on a Sunday; the creatures pass "the best of all the seven" confined in a close atmosphere, and eating food which they have contaminated by breathing upon. The man observes the day of rest himself, and takes his ease; for the "brutes" he has heaped up rack and manger—so they have to eat; what more can dumb animals require? Upon opening the door on Monday morning, he may see one horse with a swollen leg.



THE CARTER'S FIRST APPEARANCE IN THE STABLE ON MONDAY MORNING.

The drudge generally (not invariably) is lame, and holds the enlarged member in the air; the coat stares; the aspect is dull; and much of the abundance which was placed before the animal remains untouched. The poor creature was too tired and in too much pain to eat; but agony has created a consuming thirst, and it will drink the foulest water.

Let every man who keeps cart-horses view a case of water farcy as a caution, proceeding direct from nature, that the management of his stable requires immediate change.

Water farcy is, however, an admonition which all men should understand; the horse, when thus attacked, announces that farcy hovers over the stable. Let the work of the team be made less prolonged and less exhausting; let the provender be improved. Give none but good hay, as bad may fill the stomach but it brings down the belly and impoverishes the blood. The team may not travel fast, but they are out for many hours; generally, they cover more ground than horses of a quicker pace; they also pull weights, before which none but a cart-horse would be harnessed. On the appearance of water farcy, therefore, let the distances be shortened, and the loads lightened.

Then, for remedial measures, let the diet be nourishing, the bed cleanly, the house drained and airy. As for exercise, let the horse, so soon as it can bear the motion, be gently led out morning, noon, and night, for one hour each time; or, should the disease occur during the spring or summer, a run at grass in a good pasture will assist markedly in assisting other curative measures.

As for medicine, when the limb can bear friction, let it be well and often hand-rubbed; the oftener and the longer the better. Every morning saturate it with pails of warm water, wipe it dry immediately, and then set to work hand-rubbing the leg, This is all that is absolutely necessary, save that, if the lameness continues longer than the first day, a few punctures may be made through the skin. These should be equally distributed, each being about three-eighths of an inch deep and one inch long, so as to divide the skin but not to wound the muscles beneath. Through these incisions the fluid, by which the limb is distended, will escape. As for physic, the following ball should be given every morning, if the proprietor can think a sick servant merits such trouble and expense:—

Iodide of iron	One drachm.
Powdered cantharides . .	Two grains.
Powdered arsenic	One grain.
Cayenne pepper	One scruple.
Sulphate of iron . . .	One drachm.
Treacle and linseed meal .	A sufficiency.

Make into a ball and give.

This should be made as it is wanted; for, by keeping, the ingredients become hard, and are apt, when given in that state, to cause injury to the animal.

By such slight and simple means water farcy has generally been removed; but no delay should occur in having recourse to them, as some cases will set all endeavours at defiance, and delay is always dangerous where health is concerned. A few days of neglect will often permit the disease to become organised. The parts cease to pit on pressure. Fibrine has been effused under the skin. The swollen leg is even harder than is the healthy member. Then the horse, should it escape true farcy, will carry about an enlarged member for the duration of its remaining life.

PURPURA HÆMORRHAGICA.

The cause of this terrible affliction is a mystery. The horse has worked, fed, and looked well when locked up for the night. The next day the animal is discovered breathing with difficulty, and having several parts of the body greatly enlarged. The creature appears by the disorder to be rendered stupid rather than insensible. It stands erect, but seems not to be acutely conscious of its condition. Not only are several portions of the horse's frame swollen beyond all recognition, but through the skin there issues streams of serum, fearfully variegated by the admixture of blood. The openings to the nostrils and the lips soon enlarge; then the tongue likewise increases in size, a portion of it hanging out of the mouth. The appetite is never entirely lost, though the affliction prevents deglutition. In this lamentable state the wretched horse may continue for several days, or the disorder may reach its termination in a few hours.

A HORSE'S HEAD DEFORMED BY PURPURA HÆMORRHAGICA.

As the horse begins to recover, extensive sloughs occur, generally in those parts which have been much enlarged.

Recovery appears to restore the consciousness in some degree, and the life is prolonged at the expense of much suffering. The appetite remains. The power to eat is nevertheless slowly attained.

The desire for fluids, however, appears to exist throughout the attack, and should be taken advantage of to nourish the patient, by presenting thin gruel in the place of water.

Purpura hæmorrhagica is universal congestion. If the body of an animal which has succumbed to this disease be examined, the cellular tissue will be found distended with serum and with blood of a dark venous character.

Immediately on the recognition of this malady administer half a pint of linseed oil, and two hours afterwards give thrice daily.

It is imperative to be speedy in adopting the measures intended to relieve purpura, for the disease rapidly attains its termination. For that reason, if the breathing is distressed, as is pretty certain to be the case, at once perform tracheotomy. Impure oxygenisation of the blood is one of the most active causes of congestion; indeed, that state appears only possible during impeded respiration.

The tongue often becomes infiltrated; and, hanging out of the mouth, renders the appearance of the head most unsightly. It is, when thus enlarged, a fixture, and is in danger of being injured by the teeth. So soon, therefore, as the member is protruded several free incisions should be made through its integument. The organ should then be manipulated, so as to cause the fluid to exude. These processes should again and again be had recourse to, so often as they are required to return the tongue to the mouth.

The sloughing of the skin is a serious matter. It is treated by the solution of the chloride of zinc—one grain to the ounce of water—applied by being squeezed from a sponge on to the denuded part. This lotion will not only promote healing, but it will also destroy the fœtor which results from decomposition.

THE HIND LEG OF A HORSE ENDURING PURPURA HÆMORRHAGICA.

After all, however, these cases are mostly very unsatisfactory.

The condition of the animal suffering from this terrible disorder is indeed dreadful. If the brain be oppressed, the body is deformed out of all recognition. The beauty of the animal is lost and the carcase becomes so misshapen as to be commonly compared to a hippopotamus. The legs share with the trunk the general

disorder, and from these, as from other parts, blood and serum will exude.

STRANGLES.

Strangles, in its effects upon the body of the horse, is similar to measles in the human being. Both are diseases peculiar to the young, both sometimes occur after the attainment of maturity, and both are dangerous, in proportion as their advent is delayed. Both also are attended with evil consequence if driven inwards, or if any irregularity warps the even tenor of their course.

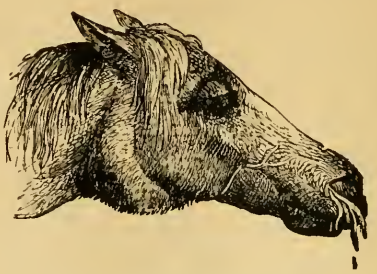
Here, however, the similarity ends. Strangles is developed as an abscess under the jaw; measles appears as a rash all over the body. Both, however, are eruptive; and both are cast outward, at some expense to the system.

Strangles is a disease as common to horses as measles are to children. Few escape its visitation, and for this reason it has been assumed that by it some deleterious agent is removed from the equine system. It may relieve the body of the high-bred and tenderly-nurtured animal of something which might prove injurious, if retained, although it is impossible for us to detect the nature of the offender which nature is supposed to eject. Still it may be, and probably is, an effort to adapt the body to a sudden change of circumstances, though whether these circumstances are natural or induced still remains to be proved.

Highly-bred horses are cared for from the moment of their birth. Up to a certain period (varying in different parts of the country and in different animals) the colt is allowed to roam the field. All at once, however, it is taken up, and its education commences. From the dew, and from the grass under its feet and within its mouth, the colt is suddenly removed to dry food, and is imprisoned inside a hot and fœtid stable. Nature rebels against such treatment. The strangles is the consequence, after which the poor captive becomes better adapted to its unnatural situation.

Strangles is ushered in by slight general indisposition, which however does not pass away. Sickness rather hovers over the colt, than plumps directly upon it. The animal is then, in stable phraseology, "breeding strangles." After a few days a stiffness of the neck is conspicuous; subsequently an enlargement can be perceived. It is at first very hard, hot, and tender. A discharge

from the nose appears. The symptoms of general disease become aggravated. The throat is sore; the breathing is oppressed; the



THE HEAD OF A HORSE WITH STRANOLES.

discharge is copious; the coat stares; the appetite is lost; the creature stands with eyes half closed, the picture of mute distress.

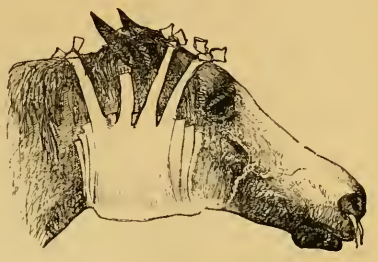
At length the tumour softens. It becomes prominent at a particular spot. Upon this place the surgeon makes an incision. A pint or more of pus escapes, and the animal quickly recovers.

Such is the history of a case of strangles, as the disorder generally develops itself. Of course it will vary in degree, though in every instance a sufficient similarity will be apparent to guide the student.

With regard to treatment. Never purge a colt when it exhibits a dubious sickness. It may be "breeding strangles," and the strength then will be needed to cast off the disease. Give all the nourishment the animal can imbibe. If corn, etc., be refused, give warm bran and oatmeal mashes, and try the animal with green meat, as such sometimes will entice a delicate appetite. But, if the colt is not frightened at the approach of a stranger, the food should be offered little at a time, by the hand, not forked into the rack or cast upon the ground, for the animal to breathe upon and then turn from with disgust. Corn (crushed and scalded) may be allowed, if it can be eaten. No grooming must annoy the feverish body; the clothing must be light; the bed should be ample, and scrupulously clean; the loose box ought to be large, perfectly well-drained, with every door and window open during the day, and only partly closed at night.

The swelling at the throat, which is hard at first, is in a state of development, and must not be interfered either with too stim-

ulating liniments, blisters, or with the knife; for many cases have come under our notice where too energetic action, as above indicated, has led to most disastrous results. The abscess should be constantly bathed with hot water, or a poultice consisting of crushed linseed and bran can be applied through the medium of an eight-tailed bandage, as the illustration depicts. This treatment will sometimes be sufficient to render the abscess soft, which indicates that the formation of pus is steadily increasing; yet still continue to poultice until the swelling pits on pressure—that is, until the little finger can be imbedded in its centre; then an opening, an inch long, can be made, and less or more pus will escape, and can be thoroughly evacuated by gentle manipulation. Sometimes the abscess will not come to a head, when it will be necessary to apply a cantharides blister, consisting of the powdered fly in association with turpentine, and well mixed with lard. And even when this has been rubbed into the throat the poulticing must still be continued, and in nine cases out of ten, within a few days, the abscess will break and the pus will be discharged.



A HORSE WITH STRANGLES, WEARING AN EIGHT-TAILED BANDAGE.

With some horses, it fortunately is seldom required; a twitch has to be used in order to keep the head in a fixed position, so as to determine the exact spot on which to make the incision, and also so as to keep the head still during the operation.

The twitch is a long stick with a short loop of cord at one end. Into this the upper lip of the horse is inserted, the stick is then twisted round and round until it tightens upon the lip and holds it securely. The twitch should never be used unless absolutely necessary, and for opening an abscess situated in the horse's throat has never been used by the reviser.

If blisters or too stimulating embrocations be applied to the abscess, or the knife be used before the tumour is ripe, another class of symptoms will be aroused, caused by either retarding the development of the tumour and sometimes by the absorption of pus. Soreness of throat when attempting to drink, refusal of food,

give evidence that matters are not progressing favourably. In such cases the food must be carefully prepared. No mashes, made by merely pouring hot water into a pailful of bran, stirring it round once or twice and splashing the mess into the manger, will

OPENING THE ABSCESS OF STRANGLES.

now do. Even malt mashes will not answer the purpose. Good gruel must be carefully prepared and frequently changed. The drink must also be varied, so as to tempt the sick stomach: as a general rule, equal parts of grits—not oatmeal—linseed meal, bean, or pea-flour may constitute the ingredients. Let the drink be always just warm, when placed before the animal. Sometimes clover hay, or simple hay-tea, may form the basis of the drink; sometimes one or other of the constituents may be withdrawn. Too much care cannot be taken of the horse at this period. Good nursing is now the most effectual, as well as the cheapest medicine; and all warranted expense at this time is a saving in the end. The breathing, also, is frequently most acutely distressed. In severe cases, the symptoms are so alarming as to demand the immediate performance of tracheotomy. This the surgeon is forced to have recourse to, although, at the time, he knows it will only be temporarily required. When, though distressing, the disease is not of so fearful a character, relief may be sometimes obtained by mingling steam with the air which the animal inhales, and casting upon the source of vapour ten or fifteen drops of the ethereal tincture of phosphorus. This last artifice may be renewed every quarter of an hour, should it appear to afford even the slightest relief.

Avoid physic as much as possible. In strangles, purge and kill is the rule. Open the bowels, if it be imperative, by green-meat; if that should not answer, let them alone, however confined they may be. Let the fever rage; but do not potter with one drug and another "*to cool*" the body.

Some horses suffer terribly when they have strangles. The reasons for such a difference have not, hitherto, been ascertained; but, doubtless, science will one day discover them. In bad cases the tumour appears under the throat, but it is larger than usual, and longer in maturating than is customary. Tears, frequently mingled with pus, flow from the eyes; a copious discharge runs from the nose; the pendulous lips are disfigured by long bands of thick saliva; the coat is dull, erect, and rusty; the heavy lids close the sight; often the nostrils become dropsical; the breathing is fearful; the tumour presses against the larynx, and a roaring sound is audible at each inspiration.

A BAD CASE OF STRANGLES.

For this case, no more must be done than was directed for the milder form of the disease. The animal may be gently cleansed, but this office must be tenderly performed; for the filth will do far less harm to the horse than the provocation of irritability. Gruel, repeatedly changed, should always be within easy reach of the mouth: the pail should be hung upon a hook, so that the head may not be necessarily raised to reach the nourishment. A little of the sediment, strained from the gruel, should be placed in the manger, as some quadrupeds will only eat; others will only drink; a third class will be content with such nourishment as they can suck up from the more solid form of slops; a fourth may all but starve—yet no coaxing will induce the sufferers to look at aught but the dry, hard food, which they dare not swallow. Most, however, will feed on green-meat, and this should always be at hand. Should the animal become worse, tracheotomy may be necessitated. Then stout and treacle should be liberally horned down—half-a-pound of treacle being mingled with the quart of stout, and the whole mixed with a quart of good thick gruel.

However, give at one time only so much as can be taken without distress being occasioned.

Besides those varieties already mentioned there is yet another form of strangles—that is, where no tumour appears beneath the jaws, but several form on other parts of the body. They generally contained about a pint of pus. And if the direction given for the treatment of strangles be observed, the animal will usually recover upon these being opened.

The great danger of strangles is, in the disease fixing upon any internal organ: the horse is of no use afterwards. It sinks from bad to worse, till it resembles the illustration appended to "Chronic Indigestion." The best thing which can happen in such a case, is the death of the wretched creature. To prevent so lamentable a termination to a generally mild affection, nurse with every possible care and begrudge no expense which can add to the comfort of the patient.

GLANDERS.

This is the most loathsome disease to which the horse is subject; it is of highly contagious, no doubt parasitic nature; but science has not as yet determined the *fons et origo* of it. This malady is met with throughout the whole equine family, more frequently in old worn-out horses than among well-kept and young animals. Crowded stables and exhaustive labour and over-stimulating foods are thought to be a fruitful source of glanders—*i.e.*, any devitalising cause which induces weakness renders the creature so afflicted a ready recipient of disease, and especially that of a parasitic character. From whatever cause it may originate, when once established it necessarily becomes a source of great anxiety to the owner, and especially so if he be the possessor of a large stud, as it spreads rapidly by contagion; and any horse may catch the disease, or its first cousin farcy, which to a certain extent are similar, in that they are communicable from one to the other. Farcy may, by inoculation, produce farcy, and *vice versâ*.

These disorders have been the scourges of horse-flesh. Men, to their fellow-men, sometimes confess, without any sense of shame, that they buy cheap horses to work them up. It is, in some

cases, esteemed more economical to exhaust the life, than to purchase and to maintain that number of animals which would be equal to the labour. This horrible system is in daily operation in a country professing humanity.

Glanders is provoked by human depravity. Had people common feeling for the life over which they are given authority,—would they only admit, in its largeness and its truth, that "the labourer is worthy of his hire," the extension of the disease might be reduced if not ultimately eradicated.

At present the affection exists as the dread of every horse proprietor. It is highly contagious—all owners of horses know this. The stable may be scrupulously clean, yet the poison may have been lodged there by the last inhabitant. It is not only contagious to horses, but it is equally dangerous to men.

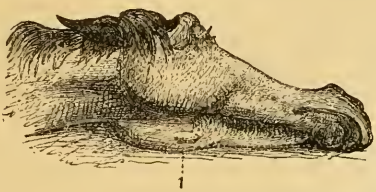
Consequently, all men have a selfish interest in opposing any conduct likely to generate so horrible a scourge. Man is answerable for the comfort of every creature entrusted to his charge. He may refuse to accept the conditions of the trust, but he cannot escape the responsibility. In proof of the truth of this conclusion, glanders is now recognised as one of those incurable diseases, to which the human being is liable, in every hospital throughout the kingdom.

THE LUNGS OF A HORSE WHICH HAD PERISHED FROM GLANDERS.
(A portion of the left lung has been excised, to show the ravage of the disease.)

When glanders exists, a staring coat generally declares the skin affected, and the customary termination of the disorder (farcy and dropsy), proves more than the surface of the body to be implicated. The lungs, or at all events the air-passages, never escape. Loss of flesh and swelling of the glands demonstrate the absorbent system to be involved. Absence of spirit and inability to work, towards the close of the affection, are evidence the nervous system has not escaped. The pallid aspect of the

muscles after death convinces us that they were far from healthy. Of all parts, perhaps, the abdominal contents are least diseased; though the marked decay of appetite does not favour such an opinion.

A horse, full of corn and in the prime of health, if unfortunately inoculated with the virus of glanders, generally has the disease in its acutest form: the animal may be dead by the expiration of a week. Other quadrupeds, in which the disorder is provoked by natural causes, may, on the contrary, exhibit glanders in the most chronic shape. If the exciting cause has a strong constitution to act upon, especially if the horse soon after imbibing the poison be removed to easier work or a more dry abode, the malady may exist for years in a subtle, undeveloped form. A thin discharge only may run, irregularly, from one nostril. At times no fluid may appear, nor is the liquid ever copious. One of the kernels, or lymphatic glands, situated between the branches of the channel, may be more or less fixed. But, otherwise, the horse is active, full of fire, and exhibits nothing to excite suspicion. During all this time, the creature may be endowed with a fatal power of communicating the disease. Horses, having received the taint from such a source, may die within the week; while the cause of the mortality eats well, works well, delights the master's eye by its thriving appearance; and in such a condition even may exist for years.



THE HEAD OF A HORSE WHICH HAD BEEN SLAUGHTERED FOR GLANDERS.

1. The lymphatic gland enlarged, hard, and adherent firmly to the interior of the jaw-bone.

In the early stage, it is difficult to pronounce positively upon a case of glanders. Ulceration of the nasal membrane would be confirmation of the worst doubt; but the ulceration may be situated so high up as to defy all our efforts to distinguish it. Yet, running from the nose may be perceptible, and the gland may be fixed to the jaw. Both of these symptoms, although lawfully provoking our fears, are frequently attendant upon aggravated or upon prolonged colds.

Glanders is mostly ushered in by febrile disturbance. The

appetite is bad, the coat stares, and the pulse is quickened. A mash or two, however, apparently sets all right, and the matter is forgotten. Soon afterward a slight discharge may issue from one nostril; but it is so very slight, it excites no alarm. One of the lymphatic glands, on the same side as the moist nostril, alters in character. It may remain loose and become morbidly sensitive. Usually, however, it grows adherent to the jaw; turns hard, insensitive; and, from being wholly imperceptible in the healthy animal, enlarges to about the size of half a chestnut.

THE PRIMARY DISCHARGE OF GLANDERS; SIMPLY A SLIGHT WATERY DEFLUXION.

THE SECONDARY DISCHARGE. A THICK AND COPIOUS, BUT STILL TRANSPARENT EXCRETION, CONTAINING PIECES AND THREADS OF MUCUS.

At a later period the discharge, retaining its clear appearance, becomes more consistent, and, to a slight degree, the hairs and parts over which it flows are encrusted. It subsequently adheres to the margin of the nostril, and then, in the transparent albuminous fluid, may be seen opaque threads of white mucus. This marks the second stage.

The next change takes place more rapidly. The transparent fluid entirely disappears, and in its place is seen a full stream of unwholesome pus. At this time there is some danger of glanders being mistaken for nasal gleet. A little attention will, however, rescue any person from so imminent a peril. The smell of glanders is peculiar. It is less pungent but more unwholesome, suggesting a more deep-seated source than characterises the disease with which it has been confounded. The ejection of glanders, moreover, is obviously impure; whereas that of nasal gleet generally flows forth in a fœtid stream of thick and creamy matter.

THE THIRD, OR SUPPURATIVE STAGE OF GLANDERS.

When the third stage is witnessed, the disease is rapidly

hurrying to its termination. The membrane of the nose changes to a dull, leaden colour. The margins of the nostrils become dropsical, and every breath is drawn with difficulty. The defluxion exhibits discoloration. Scabs, masses of bone, or pieces of membrane, mingled with patches of blood, next make their appearance; and the inward parts are evidently being broken up by the violence of the disorder.

THE FOURTH, OR LAST STAGE OF GLANDERS.

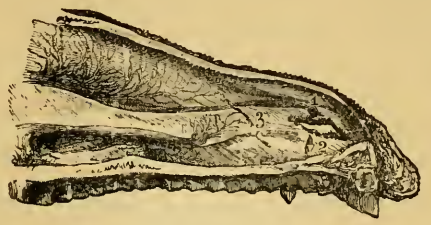
The above description of filthy facts is, probably, sufficiently explicit; but to render the foregoing more clear, the following diagram is appended. The reader will perceive there two kinds of tubercles—the large and the small. One is no bigger than a grain of sand; the other is as large as half a pea. The disease which follows both is the same—is equally contagious and is equally fatal. It will also be remarked, the membrane appears swollen and partially discoloured, in the case of glanders. It loses its bright, fleshy, or healthy hue; and it assumes a dull, heavy, and dropsical aspect. There will likewise be observed, that comparatively few blood-vessels are ramifying upon the affected membrane, which sign, in a well-marked case, is often so obvious as to become a leading indication of the disorder.

THE SEPTUM NASI OF AN OLD HORSE, SHOWING THE DIFFERENT KINDS AND STAGES OF GLANDERS.

1. A large tubercle.
2. The same, in the ulcerative stage, pale in the centre and dark at the edges.
3. The same ulcers after they have united, sloughed in one another, or become confluent.
4. The roughness which announces granular tubercles to be beneath the skin.
5. The slightly elevated condition of the membrane, when granular tubercles appear.
6. Granular tubercles in the vesicular stage.
7. Granular tubercles in the ulcerative stage.
8. Granular tubercles after they have ulcerated and assumed the confluent form.

It is usual for low dealers, when a tubercle in the vesicular stage is detected, to assert that it is only a piece of mucus. To test such assertion, wrap a portion of tow, or anything soft, round a small stick, and wipe the place. If it be mucus, it will be removed;

but, if it remains, the reader may rest assured as to its nature. When an ulcer is seen, the dishonest salesman will laugh, and ask if that is all the inspector can discover? declaring the horse recently hurt itself against a nail. The interior of the nostril is a very sheltered part, and therefore very unlikely to be wounded. Yet, so that the reader may be prepared to recognise such reality, in spite of the hard swearing and loud jocularity which is designed to confuse him, a diagram of a portion of the nostrils, covered with healthy membrane, and showing the veins natural to the part, also displaying the shapes and appearances of wounds (when they occur), is inserted.



THE TURBINATED BONES OF A YOUNG HORSE WHICH WAS FREE FROM GLANDERS; SHOWING THOSE APPEARANCES A GLANDERED NOSTRIL IS OFTEN ASSERTED TO EXHIBIT.

1. A punctured wound, the skin removed, but darkest towards the centre.
2. A lacera'ed wound, with a flap of pendant membrane.
3. A scratch—long and rough—having the edges slightly raised.

The reader has been told what constitutes glanders. He has been instructed how to recognise its more marked indications. There, however, remains to teach him the manner in which a suspected horse should be handled or examined.

The animal's head should be turned towards the strongest light obtainable; if towards the blaze of the noon-day sun, so much the better. The examiner should then place himself by the side of the creature's head, not in front, but in a situation where, though the animal should snort, he is in no danger of the ejected matter falling upon him. With one hand the upper and outer rim of the nostril should be raised; when grasping this part between the finger and thumb no fear need be entertained. The case would be something more than suspicious, were any risk of contamination incurred.

The wing of the nostril being raised, the examiner must note the appearances exposed; this he will best do by knowing where to look and what to expect. His eye has nothing to do with the

skin, nor with the marks that appear upon it. The opening of the lachrymal duct often challenges observation by being well defined and particularly conspicuous; but that natural development does not concern him; to that no attention must be given.

THE PROOF OF GLANDERS.

1. Termination of the lachrymal duct—a natural development.

2. A discoloured membrane, disfigured by ulcerative patches.

The inspection must be concentrated upon the membrane, more internally situated than the skin seen at the commencement of the nostrils. The skin, moreover, suddenly ceases, and is obviously defined by a well-marked margin; there is, therefore, no difficulty in distinguishing the membrane, by its fleshy and moistened aspect, as well as by its situation. If, on this membrane, any irregular or ragged patches are conspicuous; if these patches are darker towards their edges than in their centres; and if they, nevertheless, seem shallow, pallid, moist, and sore, the animal may be rejected as glandered. Should any part of the membrane (after being wiped as before directed) seem rough, or have, evidently, beneath its surface, certain round or oval-shaped bodies, the horse assuredly is glandered. The membrane may present a worm-eaten appearance, or be simply of a discoloured and heavy hue. In the first case, the animal ought to be condemned; in the second, it is open to more than suspicion.

No animal should be permitted to slowly perish of glanders. The disease, as it proceeds, affects the fauces, pharynx and larynx; all become ulcerated. Not a particle of food can be swallowed, not a drop of saliva can be deglutated, not a breath of air can be inspired without the severest torture being experienced. As the disease proceeds, the obstruction offered to the breathing grows more and more painful. Farcy breaks forth and, as a consequence, superficial dropsy is added to the other torments. The edges of the nostrils enlarge; the membrane lining the cavities bags out, while the fauces and larynx contract; the discharge becomes more copious, and the breathing is impeded. Thus, the difficulty of respiration is increased, just as the condition of the lungs renders the necessity of pure air the more imperative. Ultimately, however, laborious breathing induces congestion of the brain, and the

wretched sufferer falls insensible (it is hoped) to die of actual suffocation.

Such is a brief description of glanders, to cure which, every now and then pretenders arise. No medicine, however can restore the parts which disease has disorganised. There is no cure for glanders, which is essentially an ulcerative disorder. Every horse being thus contaminated should be at once destroyed. When this work was first issued, no law existed to prevent the nefarious traffic in glandered horses. Animals so affected could not be exposed for sale at Smithfield market, but private sales were permitted. No legislation had been enacted whereby the blackguards who dealt in contagion could be prosecuted, but at this day a law exists which prohibits the exposure, even, of a glandered or a farcied horse in a public thoroughfare. Anyone noticing a suspicious case can inform the nearest policeman and have the suspected animal detained until a competent veterinary inspector has examined it; and it is owing to the vigilance that has been exercised by the authorities and veterinary inspectors that the prevalence of this most dreadful malady has decreased. In the past the sale of glandered horses, during the passage from one stable to another, rendered possible the inoculation of them, and consequently a continued stream of contagion was perpetuated, and fresh centres of this disease were for ever being established, and by these means glanders was propagated; and even now the Act might be carried out with greater effect if they were under the distinct control of the Agricultural Department of the Privy Council Office, as it would insure unity of action, which is by no means the case now; as the Local Authorities make laws of their own which, in some instances, actually interfere with some of the wise provisions of the Contagious Diseases Animals Act to so great an extent as to render them dead letters.

These remarks apply to all diseases which, under the Act, are treated as contagious, and with which the Local Authorities have to deal; and in doing so they may be not correctly advised by their clerks and others who may hold official positions. Such men may be ever so learned in law, but they lack the scientific and practical knowledge of disease; and this defect totally incapacitates them from thoroughly or correctly informing the authorities on matters of disease; and in some cases interested motives have caused

appointments to be made of no practical use, either in assisting the law, or in staying the spread of disease. In such cases public money has been uselessly wasted; and it is for these reasons that the sole control of cattle inspection should be placed in the hands of the Agricultural Department of the Privy Council. If such were the case a direct and distinct understanding would exist between the prime authority and the inspectors, who would be in direct touch with Professor Brown and the Government inspectors, men in whom the inspectors throughout Great Britain would have confidence, and from whom laws would emanate to be applied similarly in one as in another county. Such unity of opinion would lead to more satisfactory results, prevent the occurrence of divided action, and establish that uniform control which alone is capable of making the administration of the Contagious Diseases Animals Act thoroughly effective.

FARCY.

When the horse, which has been the pampered favourite in its youth, grows old, it generally becomes the half-starved and over-

THE OLD FAVOURITE AND THE NEW PET.

worked drudge of some equally half-starved proprietor. In the fulness of its pride and the freshness of its strength, it had to canter under the airy burden of my lady's figure. When the joints are stiff; when accident, disease and sores, have rendered every move-

ment painful; and when its energy is poorly fed upon the rankest provender—then the wretched animal is, by the whip of a thoughtless hireling, forced to toil between the shafts of some creaking cart. It it sad to watch the vehicles on a London road, and speculate upon what has been the past fortune, and will be the future fate, of the animals which propel them!

Farcy is peculiarly the lot of the poor man's horse. It is the consequence of utter exhaustion. It is the horrid friend—the last and dreadful rescuer of the thoroughly wretched. No one cause will produce it. To generate farcy, there must be a congregation of evils: the constitution must be weakly; the grooming must be neglected; the food must be stinted; the bed soiled; the dwelling small; the drainage bad; the master unfeeling and the work excessive. All of these things, or so many of them as nature can endure, must exist, before farcy can be generated.

It is true, the disease can be communicated by inoculation. but that source of farcy is of very small importance. Not one case in a thousand thus originates. Farcy is essentially a skin disease. It commences with specific inflammation of the superficial absorbents. This inflammation leads to suppuration and to ulceration. Abscesses first appear. They may come on any part of the body. They seem to be, in the primary instance, lumps or hard enlargements. Something of the annexed form is first observed. There may be one of these, or there may be many. Ult mately, they burst or are opened. Apparently healthy matter then issues from the interior. But the first discharge being released, the wound does not heal. The edges grow rough, the centre of the sore becomes pale, and moistened by a thin semi-transparent fluid. Then, if the neighbourhood of the sore be felt, cords, more or less thin, will be discovered running from it, towards some other lumps on the body.

A FARCY BUD.

Such is the distinguishing sign by which to recognise farcy. Lumps appear which prove to be abscesses. They, after discharging, do not heal—they become ulcers. From them run certain

cords, which are the swollen lymphatic or absorbents. Till the enlargement of the absorbents is discerned, a man, from the other signs, may suspect, but he cannot pronounce, with certainty, the disease to be farcy.

If a recent case of farcy be slaughtered and dissected, the affection appears to go no deeper than the skin. The cellular tissue will exhibit indications of dropsy, which invariably is present. The muscles will be pallid and flabby, suggesting bodily debility; but, to most observers, such signs will be all that is discernible.

Is farcy, then, strictly a local disorder? Can such be asserted of a malady which appears to be so constitutional in its origin? Is there nothing continuous with the skin? Yes, there is. Intimately connected with the outward covering of the body, imperceptibly blending with it, and capable, after exposure, of assuming its appearance, is the mucous membrane. Mucous membrane lines the interior of the body, and is very abundantly supplied with absorbents. The French, who are far more minute observers and more accomplished dissectors than the generality of English surgeons, have, in cases of farcy, detected signs which assure us the disease is not strictly an external affection. It has an internal and a deep-seated origin, as is evidenced by the discovery of a few tubercles upon the mucous membrane of the interior.

The course of the disease would, likewise, teach us to arrive at this conclusion. The appetite often fails—sometimes it becomes voracious. The matter is, by pressure, to be squeezed through the skin. The thirst becomes torturing; the horse will cry for water. All it drinks, however, passes quickly through the body, and the desire for fluid cannot be satisfied. At last (as though to prove the correctness of our opinion concerning the constitutional nature of farcy) glanders breaks forth.

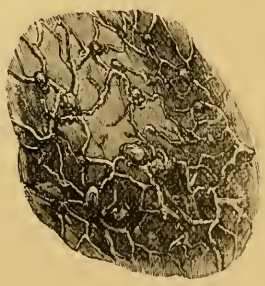
Glanders and farcy seem to be the same disease, modified by certain circumstances to which the animal is exposed. Thus, a horse inoculated with the matter of glanders, may become farcied; or an animal, infected with the taint of farcy, may exhibit glanders. These results, together with the fact of a glandered horse displaying farcy prior to death, and of a farcied animal exhibiting glanders previous to decease, are pretty conclusive evidence.

Farcy is of two kinds: the large and the small. The large may appear as one or more abscesses. Generally, it is disposed to select, in the first instance, those places where the skin is thin, and the hair all but absent. It breaks, and becomes shallow ulcers, which, however, may heal, upon application of any escharotic. The abscesses are not, in every instance, of one absolute figure. They vary in such respect, and have a tendency, if neglected, to generate large ulcers, from which spring unsightly bunches of fungoid granulations.

FARCY, ON THE INSIDE OF THE HORSE'S THIGH, WHERE THE SKIN IS THIN, AND THE HAIR ALMOST ABSENT.

The smaller description of this disorder has no preference for any particular locality. It appears, like surfeit, in small lumps all over the body. These lumps, from their size and uniformity, have been likened to buttons; hence the term "button farcy." Cords soon connect them; they maturate and burst, like the larger sort. The "button farcy," however, leaves a deeper and a more painful ulcer. It yields less readily to treatment, and seems to exhibit itself before the body is utterly exhausted.

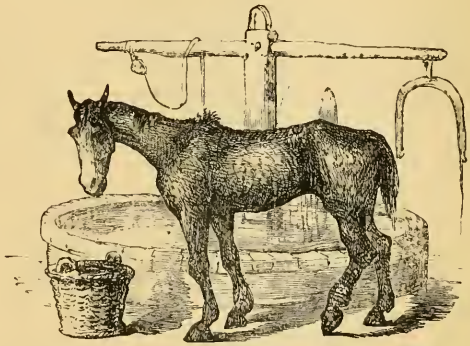
How very numerous the absorbents of the skin are may be conjectured from the subjoined engraving of a prepared specimen—and not a very successful one either—of a piece of farcied skin, when deprived of hair. In this case, the animal suffered under the large or common form of the disease. In the button variety the tumours would only be smaller, of a more even size, and far more numerous.



A PORTION OF SKIN, TAKEN FROM A FARCIED HORSE, INJECTED WITH MERCURY.

Farcy is, by the generality of practitioners, regarded as a more tractable disease than glanders. Certainly, the course of the disorder is arrested much easier; but, to cure the malady, there is a constitution to renovate and a virus to destroy. Is it in the power

of medicine to restore the health and strength, which have been underfed, sapped by a foul atmosphere and exhausted by overwork? Tonics may prop up or stimulate for a time; but what can be hoped for, in an animal whose treatment is, generally, an affair of pounds, shillings, and pence? Sulphate of copper or of iron, oak bark, cayenne pepper, cantharides, and corrosive sublimate, probably, are the chief medicines the practitioner will give. With such, the horse may be patched up; it may even return to work. But at what a risk? It carries about the seeds of a disorder, contagious to the human species, and, in man, even more terrible than in the quadruped. Is it lawful—is it right—to save



A GENTLEMAN'S SERVANT OUT OF PLACE.

an avaricious master the chance of a few shillings, and to incur the risk of poisoning an innocent person? The author thinks not. Therefore, he will give no directions how to arrest the progress of farcy. The horse, once contaminated, is indeed very rarely or never cured. The animal, after the veterinary surgeon has shaken hands with the proprietor and departed, too often bears about an enlarged limb, which impedes its utility, and, at any period, may break forth again with more than the virulence of the original affection. The reviser has the credit of having cured several cases of farcy, but most of these have found other homes a short time after their supposed recovery; consequently, the cases could not be followed, and history of the horses' lives afterwards has been lost sight of. Other instances could be cited in which it has been proved how futile

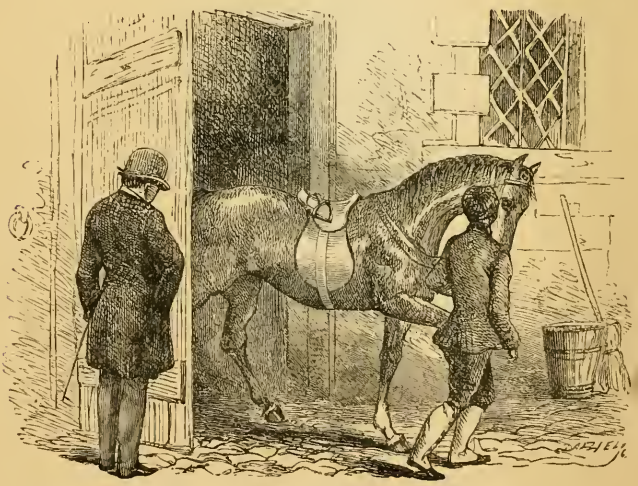
all medical effort has been in permanently eradicating from the system this dread malady. Months have elapsed, when farcy has reoccurred with greater virulence than on the previous occasion; and the knacker, whose services should have been previously engaged, has been sent for to terminate the sufferings of a twice afflicted creature.

CHAPTER XII.

LIMBS—THEIR ACCIDENTS AND THEIR DISEASES.

OSSEOUS DEPOSITS—SPAVIN.

"One horse could wear out two pairs of legs," is an old jockey's phrase. Most men, when purchasing a dumb slave, pay great attention to the lower extremities. If an animal be used up, or



A PARK NAG WITH BONE SPAVIN LED OUT OF THE STABLE.

has performed hard work, the indications are sure to be found on those parts; but what a comment does the language and the act referred to pass upon the conduct of those masters, the history of whose treatment, or rather whose abuse of a living creature, is thus sought for and often found upon a breathing frame!

Before the strength has departed, or the legitimate number of

years are exhausted, cruelty deprives a most obedient drudge of its power to serve. The history of almost every horse in this kingdom is a struggle to exist against human endeavours to deprive it of utility. Nature, when she made the animal, formed a creature hardly second to her masterpiece in anatomical perfection; the legs are strong, but, in his impatience and in his blind obedience to the dictates of fashion, man *will* put them to their fullest use before their structure is confirmed. Racers go into training when one year old. Carriage horses, omnibus machiners, cart horses, nags, roadsters, May-birds, and park hacks generally come into work about the fourth year. The animal, however, does not cut all its teeth till the completion of its fifth birthday. It requires to look upon eight seasons before its adult period is entered upon; and yet at the fourth year, or before that period, it is put to such work as only a mature horse can perform. Two-year-olds in racing stables are put to work before their muscles are set, before their bodies are sufficiently developed, to enable them to withstand the ill effects of severe physical exertion. The same may be said of the carriage horse; although he is not worked before his fourth year, yet he has to undergo that kind of work which only a matured animal should be called upon to perform. Such exaction, such strain upon an unformed animate machine, cannot be imposed with impunity. The harp of a thousand chords will snap somewhere, and sometimes in parts which never again regain that vitality which existed previously to accident. Too early training and working makes horses old in appearance when they are young, and causes those disastrous diseases which incapacitate them from doing, with ease, that amount of work which a more rational system of treatment would have insured.

When the horse was designed to be only matured, the frivolity of mankind pronounces the animal to be *aged*. The life is, indeed, generally worthless before the eighth year is entered upon. The young flesh, bones and sinews, long before that time arrives, are made the seats of poignant diseases. Work, not in the first instance laborious, but sudden and energetic beyond what the frame of the young horse can endure, casts it out of the gentleman's stable. Once removed from that place, its descent is rapid. From the carriage to the cab is a leap often cleared in equine history; but every change adds misery to its lot! It fares worse.

lodges worse, and works harder with every new proprietor, till at length, as its years and wretchedness accumulates, nature interposes and takes the sufferer to herself.

At the head of this article stands an engraving of the mildest form of reward which docility reaps by service unto cruelty. When will this land, which so loudly boasts its Christianity, apply in its fulness and its strength the sacred maxim, "*Do unto others as you would others should do unto you*"? When will churchmen teach that the religion which does not enlarge the heart towards every breathing life upon the earth is unworthy of the *Christian* title? Men who would rage to hear their faith called in question, nevertheless feel no shame when they urge the young steed to that act which probably will cripple the animal for the short remainder of its life.

Spavin, splint, or ringbone are no more the legitimate consequences of equine existence than noads and anchylosis are the natural inheritances of human beings; yet what would the world look like if men had their motions impeded and their joints firmly locked by bony deposits in anything like the proportion which such misfortunes are witnessed in the inferior life? The most useful, the most trusting, and the most joyous of animals is the one towards which man acts, as though his study was to abuse the authority entrusted to him. Its utility lies in its legs; its play also is a canter; but before its body is set its limbs are disabled. Kindness can subdue the creature which, however, is never taken out of its prison without the whip; it is treated as a thing without feeling, but its body is not more impressible to brutality than its feelings are sensitive to gentleness. The one is often injured, and the others are frequently vitiated by the master it too literally obeys.

BONE SPAVIN.

A swelling or bony tumour, situated upon the lower and inner part of the hock joint.

Spavin and splint both are the change of ligamentous structure into bone. Spavin occurs at the inner and lower part of the hock; splint, also, may be sometimes found at the same part of the knee. The name splint is likewise applied to any bony enlargement upon the shins or below the hocks and the knees.

Splints in the fore leg are mostly seen on the inner side. On

the hind limb, however, such growths principally favour the outer side. The advent of splint, when near the knee, is generally accounted for by saying that the inner side of the joint lies more under the centre of gravity, and therefore is the more exposed to injury. Such an interpretation, however, leaves the preference for the outer locality (when splints are witnessed on the hind leg) unexplained. Perhaps the reader will (after having contemplated the two following woodcuts and subsequent to having observed that the artery of the hinder limb crosses the inferior part of the hock, to take its course down the

THE *inside* OF THE FORE LEG, SHOWING THE VESSELS PROPER TO THAT PART OF THE LIMB GENERALLY AFFECTED BY OSSEOUS DEPOSITS.

THE *outside* OF THE HIND LEG, DISPLAYING THE VESSELS NATURAL TO THAT PART OF THE LIMB WHICH IS COMMONLY THE SEAT OF OSSEOUS DEPOSITS.

outer side of the leg, while in the fore extremity the vessel continues along the inner side of the shin bone) conclude with the author, that in splint the distribution of the blood is more to be regarded than the weight which, originally conveyed through a ball and socket-joint, can hardly afterwards affect one part to the release of the rest.

Having explained the peculiarity attending some bony tumours on the hind extremity, it now becomes our duty to explain what actually constitutes a spavin. Any bony growth or bony enlargement, however small, which is to be seen or felt upon the inner side of the hock, is a "*spavin.*" But of spavins there are three kinds. The low sort, or the "Jack" of the horse-dealer's phraseology. This answers to the splint of the fore leg, and originates

in the top of the splint bone. Beneath is a woodcut of a lowly-situated spavin.

The bony enlargement, should it be located comparatively high upon the joint, often produces acute and incurable lameness. When low down, the granules of bone have little to interfere with. Being placed higher up, the tendons have to play over the osseous deposit ; and, when that happens, the cure is hopeless.

A SHIN BONE, HAVING AN OSSEOUS DEPOSIT UPON ITS HEAD AND ON THE INNER SIDE, WHICH MIGHT BE A SPLINT OR A SPAVIN, AS IT OCCURRED UPON THE FORE OR HIND LEG.

THE INNER SIDE OF THE HOCK AFFLICTED WITH HIGH OR INCURABLE SPAVIN.

The above form of disease, however, does not ensue upon every case of spavin. Many good racers, and most seasoned hunters, have spavins, which do not in any way detract from their speed, however much these growths may interfere with their action.

Bony spavin does, when the quadruped starts, sensibly deteriorate that grace of motion which should characterise the

THE NATURAL POSITION OF THE HEALTHY FOOT, WHEN RAISED FROM THE EARTH DURING AN EASY TROT.

THE FOOT, INCAPABLE OF BEING FREELY RAISED FROM THE GROUND, BY A HORSE WHICH IS BADLY SPAVINED.

action of the perfect horse. During the trot, the leg should be lifted clear of the earth, while, by an involuntary movement

within the hock joint, the hoof is inclined outward. This peculiarity is exhibited in the woodcut on p. 310, which supposes the spectator to be standing by the side of the animals.

Exostosis, formed on any part, locks together the bones which the deposit may involve; or it unites the several distinct parts into one osseous mass. By the bones of the hock being thus joined all movement of the shin is effectually prevented; the foot of a spavined horse is, to a spectator who is laterally situated, always presented in a side view. Moreover, when severe spavin is present, the entire flexion of the lower portion of the limb is rendered impossible.

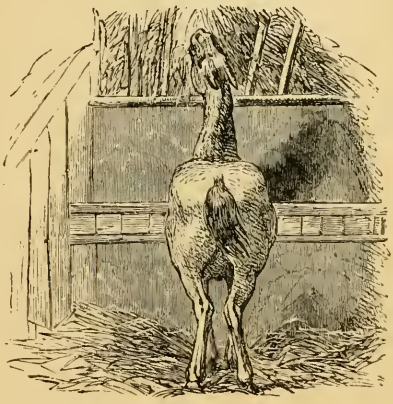
The toes being moved along, instead of being lifted from the ground, occasions the hoof and shoe to suffer wear. The hoof generally presents a toe blunted by perpetual friction; while the shoe of a spavined horse is, in front, worn to a state of positive sharpness. These indications of disease should always be sought for, and, when present, they are so obvious as hardly to be mistaken.

THE FOOT OF A SPAVINED LIMB, SHOWING THE WEAR OF THE TOE OF THE HOOF AND SHOE; BOTH ARE CONSEQUENT UPON DRAGGING THE MEMBER UPON THE GROUND.

Another test for spavin consists in observation made upon the manner of going. A horse, thus affected, comes out of the stable always stiff, and sometimes lame. Exercise, by warming the body, seems to soften the stubbornness of the disease; and the same animal, which left the stable in a crippled condition, may return to it in a state which, to the generality of gentlemen, would represent soundness. So well are dealers acquainted with this fact, that it is a custom with these folks to warm a spavin horse before showing it to a probable purchaser. No person, however, should hazard an opinion on any quadruped which is not perfectly cool; especially when there is a motive to be suspected of the slightest desire for a favourable judgment. The horse which, after exercise, should trot past with no obvious sign of spavin, having stood for an hour in the stable, would come forth a decided cripple; or, at all events, with such faulty action, that a novice would immediately detect something wrong about the legs. This peculiarity is illustrated by the engraving which heads the present chapter.

Should the dealer refuse to exhibit the animal, when cool, such refusal would be convincing evidence as to the condition of the horse. The sale should, under such circumstances, be at once repudiated.

However, when judging of disease, it is always well to divest the mind of every kind of prejudice. Animals of a certain kind of conformation are said to be disposed, or to be more than ordinarily subject, to spavin. Creatures of the foregoing sort show what are denominated sickle-hocks or cow's-hocks. A sickle-hock is not a diseased joint; but it is one which the majority of horsemen have stigmatised as very liable to become diseased. Sickle-hocks are said to represent weak hind limbs. It may sometimes be the case, as so many horsemen think so; but the reviser, after many years' experience, cannot agree in this opinion, as he has always found the best stayers in the field and the best movers on the road the possessors of such hocks, and it is seldom they are affected with spavins.



A SICKLE-HOCKED OR COW-HOCKED HORSE.

It is now our duty to inform the reader how to examine a horse for spavin. In this operation there are four points of view to be taken: behind the animal; in the front, but not close to the horse, yet so near that the examiner must bend to view the hocks between the fore legs; and from both the sides. In all these positions it is prudent now to elongate the distance, and now to

approach nearer, then to move the head about, and occasionally to step to the right or to the left. In short, it is advisable to get as many different points of sight as possible; for in one, and only in one, may a spavin be detected on the hock, which seen from any other spot shall look perfectly clean. At the same time, from every point, care should be taken to compare one hock with the other; if the slightest difference in point of size can be detected, it is fair to suppose one is enlarged by the commencement of disease. Any indication of this sort is always to be sought for. The disease may have just begun; but it is impossible to say where it may stop. The spavin may be very small, yet who can assert its growth is perfected? In the examination for spavin, however, allowance should be made for the age of the horse. Spavins in young horses may be regarded with alarm; in old animals they generally are perfected, and, however large they may be, probably they will grow no bigger; on the contrary, as the years increase, they are usually diminished, being absorbed; but the bones, once locked together, are never subsequently unloosed, although all the swelling should entirely disappear.

THE POINTS OF VIEW WHENCE TO LOOK FOR SPAVIN IN A HORSE.

Most horses are averse to having the hocks fingered; such liberties are apt to call up vehement indignation. It is necessary, therefore, to guard against this by causing the groom to raise the horse's fore leg from the ground on the same side as that of the hock about to be examined, and to keep it thus elevated during the time the veterinarian is manipulating this joint.

Thus prepared, one hand is laid upon the top of the hock, and the entire weight of the body is brought to bear upon that part. The object is threefold—to obtain by this means the earliest intimation of any design on the part of the animal to use the limb; to impede in some measure the extension of the leg, and to gain a

point of rest on which to lean, while the head is bent forward to inspect, the free hand being employed to feel the part appropriate to spavin. Afterwards comes the trot, the peculiarities to be detected in which have been anticipated.

THE MANNER IN WHICH TO FEEL FOR A SPAVIN.

Now we encounter the important question, What can be done for a spavined horse? If the animal be not lame, let it alone. However large, however unsightly the deposit may be, do not run the chance of exciting a new action in a part where diseases exist in a quiescent form.

The regular treatment is to purge, give diuretics, bleed, blister, rowel, seton, periostoteomy, neurotomy, fire and punch. The bleeding may be great or small, local or general; the blister, mild or severe; applied over half the joint at a time, or rubbed in after the limb has been scored by the iron. Rowels and setons may also be simple, or they may be smeared with irritants, which are made of different strengths. Periostoteomy may be single, or may be made compound by the addition of a seton and a blister. Neurotomy is very unsatisfactory, and very often a most tedious affair when employed to cure spavin. The fire may be down to the true skin; it may be through the skin and on to the tumour; or it may be inflicted by means of a blunt-pointed instrument, which, when heated, burns its way into the bone itself. The punch also admits of variety; it may be with or without a blister; it may be holes made in a living body, which holes are filled with a corroding paste. Or the operation may consist of the exposure of the bone, and cutting off the offending portion with a saw or knocking away part of a breathing frame with a chisel and a mallet.

All these tortures have for centuries been inflicted; they have been practised upon thousands of animals, only for men at this day to doubt whether the cruelty has been attended with the slightest service. Flesh, as capable of feeling as our own, has been cut, irritated, burnt and punched for hundreds of years;. and now, at the twelfth hour, such operations are not discarded, but their efficacy is mildly questioned.

Reader, if you have a horse which is lame from spavin, and your calculations tell you it will not pay to nurse the cripple, have it slaughtered. Do not consent to have it tortured for a chance; do not sell it to the certainty of a terrible old age and of immediate torment.

The cure for spavin is good food and rest—perfect rest—such rest or stagnation as a healthy horse submits to in the stable. This, enjoined for months, with the occasional application of a mild blister, with the best of food to enable nature to rectify man's abuse, will do more good, cost no more money, and occupy no more time than the devilries usually adopted, and very often adopted without success. As an additional motive on the side of humanity, it may be stated that the horse suffers much more when disease is located in the hind than when it is exhibited upon the fore leg. The ravages which in the first case would endanger the life, in the last would be borne with comparative tranquillity. The posterior parts of the animal seem to be endowed with exquisite sensibility; yet, in spite of this, the so-called cure for spavin, and the boasted treatment of ages, only consists in torturing the hocks of the animal.

While inflammation exists, apply poultices, and well rub the part with a mixture of belladonna and of opium; one ounce of each drug rubbed down with one ounce of water. Or place opium and camphor on the poultices; or rub the enlargement with equal parts of chloroform and camphorated oil. The pain having subsided, and the heat being banished, apply with friction some of the following ointment; it may reduce the disease by provoking absorption; at all events, it will check all further growth by rendering further deposit almost an impossibilty:—

Biniodide of mercury, ...	One ounce.
Simple ointment, ...	Eight ounces.

Mix.

SPLINT.

Colts have splints and spavins, but they are, as a rule, inherited from similarly deformed parents, which in them had been produced by hard work too early imposed. There are few horses six years old who are without splints, and in most instances they do not in

the least interfere with their usefulness when once fully developed; but when they first make their appearances, and are in their incipient state, lameness gives indication that an exostosis is pressing upon the periosteum (the membrane surrounding the metacarpus), and that inflammation of the part is the result of splint formation.

A splint is strictly an exostosis or bony tumour on the inner and lower part of the knee-joint; but there are found to be others which this definition will not embrace. Here, for instance, are the ordinary kinds of splint to be seen, more or less, in every animal, subject to man's usage.

Number one is unsightly. Moreover, it gives an unpleasant jar to the rider of the poor horse, thus deformed; and few men, when they state this fact, ever think of what sensation that which jars the equestrian must occasion to the steed. It will produce lameness at first; but, this surmounted and the tumour fully formed, it causes no inconvenience beyond a loss of elasticity, when in motion; and because it provokes no lameness, man says it is unattended by feeling.

THE DIFFERENT KINDS OF SPLINT

1. A high splint, near the knee.
2. A low splint, far from the knee.
3. A small bony growth on the front of the leg, which is also called a splint.

Figure two is a splint on the side of the leg. It also is unsightly, and produces a disagreeable sensation to the person in the saddle. Moreover, it is exposed to accidents. If the horse has high and close action, the tumour may be struck when the foot is being raised. Such a possibility is not altogether free from danger. The horse, having grazed the swelling, will often fall down, as though it were shot. That circumstance warrants the supposition that these growths are not quite so devoid of sensibility as most horse-owners are pleased to assert they are.

The slight enlargement, opposite which stands figure three, denotes a growth of small size. It may be of no great consequence, if it appear on a vacant part of the bone, or on a place over which no tendon passes; but it is of serious import if situated beneath a tendon, as its friction against the part may occasion lameness, sometimes of an incurable nature.

Yet, there are other sorts of splints, which often are very

serious affairs. That the reader may comprehend these, let him attend to the next engraving.

One—Represents a splint, which has involved the bones of the knee, and which has left the horse only the joint formed by the lower end of the radius to progress with. This is a sad business. The action is injured for life; and the wretched animal rendered useless ever afterwards.

SPLINTS OF A SERIOUS KIND.

1. A splint, involving the bones of the knee-joint.
2. A splint, interfering with the action of the back sinews.
3. A small splint, situated under the tendon of an extensor muscle.

Two—Shows fine points of bone, so placed, that they would impinge upon the suspensory ligament, if not upon the flexor tendons. Lameness, in its acutest form, would thereby be caused, wherever the limb was bent. The lameness, probably, would last till death; as splints, in this situation, are rarely discovered during life.

Three—Denotes an enlargement, probably produced by a blow received during a leap, or given by an impatient groom. It is placed directly under one of the extensor tendons. In consequence of this minute substance, the severest agony is endured, or the most marked lameness exhibited, whenever the leg is advanced.

The great majority of these maladies may result from the present rage for high action, and the too general practice of pushing the horse beyond its speed. Racers and hunters commonly have splints: almost every roadster exhibits them. Few draught horses are without them: they are all but universal. It may be easy to detect or to feel a full-sized splint; but it is rather difficult to discover these tumours when they are small, or when they are just beginning to develop themselves. At that period they are most painful. They may be mere deformities, when fully formed; but when growing, though not to be seen, they are apt to cause decided lameness.

The cause of such failing action very often can only be guessed at. To detect a fully developed splint, stand at the side of the animal's leg and grasp the posterior part of the shin; then, by running the thumb down on one side and the fingers on the other, in the groove formed by the junction of the two small splint bones

which are joined to the cannon or metacarpus during youth, through the medium of cartilage, between which and the leg bones a certain latitude of movement is enjoyed, which action is destroyed immediately the bony growth unites the metacarpus with the two splint bones in exostosis. Horses with splints, when lame, generally "dish," or turn the leg outward, when it is raised from the ground. That is done, because the bending of the limb pressed the splint bone downward; the outward carriage of the shin being an endeavour to lessen the pain which attends upon the natural action.

A HORSE "DISHING," OR CARRYING THE FRONT LEG OUTWARD, WHEN ON THE TROT.

Should no "dishing" be remarked, next observe whether the leg is fully flexed or advanced; and after the hints thus received the investigation may be resumed with a better prospect of success.

The treatment of splint is conveyed in the old maxim, "time and patience." Rest will do more than physic. A man, therefore, may as well let his horse rest in his own stable, as pay for rest, lodging and useless treatment, in another place. Splints, moreover, if only subjected to rest, accompanied with liberal feeding, are likely the sooner to attain their maximum magnitude. If they are interfered with, under the pretence of treatment, the irritation may cause them to increase; thus, the proprietor, through his impatience, may purchase an injury.

When they are acutely painful, a poultice, on which one drachm of opium and one drachm of camphor is sprinkled, will frequently afford relief. They may also, at such times, be rubbed with a drachm of chloroform, combined with two drachms of camphorated oil. Those measures, however simple, aim at mitigating the present symptoms,—they do not even infer the possibility of curing the disease. Periosteotomy pretended to do something of that sort, but has failed so often that it is now seldom recommended by practised veterinarians.

To the inexperienced it might seem easy to open the skin over the splint and remove the bony excrescence with a knife or saw, and such treatment has been often attempted, but has always failed; in fact, it makes matters worse, by occasioning such intense inflam-

mation as to cause the formation of a fresh deposit of bone greater in extent and size than that which the operation removed—consequently, such procedure is worse than useless and should never be attempted.

Splints sometimes occur on the outer side of the hind leg; there, however, they are little thought of. The hind leg propels the horse, but does not support its body; therefore, splints of this last sort are less unpleasant to the rider. The hind leg, not bearing much weight, splints, when situated on that member, do not occasion very severe lameness, and the enlargement being located upon the outside of the shin is thereby removed from the possibility of being struck by the opposite hoof. For these reasons splints of the foregoing nature are considered trifles, and are rarely esteemed worthy of much notice.

To check the further enlargement of a splint, with a fair chance of also removing the deformity (though with no hope of releasing the parts locked together by bony union), employ an ointment consisting of:—

Iodide of lead	One ounce.
Simple ointment	Eight ounces.

Mix, and apply with friction daily.

RINGBONE.

Ringbone is an osseous deposit—so far it resembles splint and spavin; it differs, however, in the kind of horses it attacks. Splint and spavin are principally witnessed upon quadrupeds of speed. Ringbone is all but confined to the cart-horse. It is caused by the violent efforts this animal makes in obedience to the voice of the driver when dragging a heavy load up some sharp ascent. The entire force is then thrown upon the bones of the pastern; inflammation ensues; lymph is effused; the lymph becomes cartilage, and the cartilage is converted into bone. Then an exostosis is established, and a ringbone is the consequence.

A HORSE STRAINING TO MOUNT A STEEP HILL.

The disease may implicate one or more bones; it may involve one or more joints; it may, also, be confined to one bone; it may be either partial or complete. It may exist as a slight enlargement in front of the bone, or it may quite encircle it. On p. 320 will be

seen a specimen of the disease. The exostosis, as in this case, was prominent during life. The disease did not quite encircle the bones; and though, when the preparation was dried, the different

THE PASTERN AND PEDAL BONE OF A HORSE AFFECTED WITH SEVERE RINGBONE.

1. The joint between the pastern bones, showing the groove in which the tendon of the extensor pedis muscle reposed.
2. The joint between the lower pastern and the bone of the foot.

THE FOOT OF A LIVING HORSE WITH AGGRAVATED RINGBONE.

The animal from which the above sketch was taken, although used to propel a cart, was by no means of a cart breed. The creature rather hobbled than went lame, but all flexion was entirely lost in the pastern bones.

parts could be slightly moved one upon another, yet, during life, the joints were firmly locked.

One of the above sketches depicts this disease as it appeared prior to death. The reader has now to consider the consequences of such a deformity; it materially interferes with the value. The hind limbs are the instruments of propulsion in the horse; these are much incapacitated by the presence of ringbone. An animal thus affected might move an easy load upon even ground; but when the weight had to be drawn up hill, the creature would obviously be unable to use the toe; the foot placed flat upon the ground, or so shod as to have an even bearing, would perceptibly be of comparatively little use in such a case. So, also, in descending an inequality, the horse with severe ringbone will be unable to bite the earth. Ringbone, therefore, does incapacitate the animal for many uses, besides interfering with the free employment of the muscular energy; no persuasion or brutality can induce a maimed animal to cast its full weight upon a diseased limb. The pace may be quickened by the lash; but the horse will, nevertheless, continue to hop when the affected member touches the earth.

Let mankind, therefore, reflect that the horse is given as their fellow-labourer. The life of the quadruped is the property of the master; but who, being sane, would abuse his own property?

The being who should destroy chairs and tables (although such things can be mended) would be speedily confined as mad. Yet, it has not entered the mind of man, as a reasonable idea, that to deface a living image—to destroy the value, or to deteriorate the property which is present in an animal—deserves more than the very mildest of punishments. The breathing creature, when defaced, cannot be made sound again. Horse property is notoriously hazardous. It should be the care of men to use a tender thing with a greater gentleness.

When a horse first shows ringbone, seek to allay the pain. Apply poultices, on which one drachm of powdered opium and one of camphor has been sprinkled. Rub the disease with equal parts of oil of camphor and of chloroform. The pain having ceased, have applied, with friction, to the seat of enlargement and around it, some of the following ointment, night and morning:—

Iodide of lead	One ounce.
Lard	Eight ounces.

Mix.

Continue treatment for a fortnight after all active symptoms have disappeared, and allow the animal to rest; then apply a blister to the affected part, consisting of:—

Biniodide of mercury	One ounce.
Lard	Eight ounces.

Feed liberally, and allow perfect rest for at least a month after its application. When work is resumed, mind it is gentle, and be very careful how the horse goes to its full labour.

STRAIN OF THE FLEXOR TENDON.

The flexor tendons of the legs are liable to a variety of accidents. Injuries to these structures, according to their severity, are denominated: strain of the flexor tendon; clap of the back sinews; sprain of the back sinews; and breaking down.

The first accident is common enough, and springs from the horse being forced to perform extraordinary work on uneven ground; by making a false step, or by accident allowing the foot to fall in a rabbit hole; by over-pacing horses, especially those in training, as it is more common to very young than to older horses.

The main cause, however, of the most prevalent of these sad deformities is that of the shaft horse descending a steep declivity with a load behind it. The weight would roll down the descent; this the horse has to prevent, and the chief stress is then upon the back tendons. The injuries to such parts are generally of a chronic character. The strain seldom occasions decided lameness. But the horse being harnessed to the shafts, the cause is in daily operation. The part injured is being constantly excited. Thus, without the development of a single acute symptom, the tendons are stretched, a low kind of inflammation is generated; and this action being kept up, the sinews gradually lose their elasticity, and shorten.

When strain of the fore leg is received the animal goes oddly, but is not lame. However, if put into the stable and taken out the next morning, the horse is found to be stiff and apparently very cramped. The halting action may disappear upon exercise; but, assuredly, it will again be present at the following dawn. The proprietor may resolve to work "the brute" sound. Such a speculation with disease may occasionally answer; but, on the large scale, it is a losing game, for it more often fails than succeeds: the limb, on work, commonly does not amend. The symptoms are aggravated in every way; and what was curable in the first stage is apt, after the lapse of time, to degenerate into an intractable malady. The many horses to be seen in the London cab ranks, with the fore limbs permanently contracted, are evidences as to the result of such very knowing treatment.

When a horse slightly strains the flexor tendon, do not expect to discover the seat of the affection till several hours have elapsed. Then pass the hand gently down the injured limb. A small swelling may be detected. The enlargement may feel soft, slightly warm, but hardly tender. Bind lightly a linen bandage round the leg, well saturated with a lotion consisting of arnica, Goulard's Extract and water, and administer a ball containing four drachms of aloes; attend to the animal's comforts in a well organised loose box. Do not turn out to grass, as all movements of the legs should be restrained so as to secure perfect rest to the injured tendons. Do not attempt to work the animal until soundness has been regained, and then only with care and caution.

CLAP OF THE BACK SINEWS.

When the accident is more severe, and the sprain more decided, it is spoken of "as clap of the back sinews." This is a serious affair. The usual fate of the wretched animal, thus maimed, is to be sold to the highest bidder. It passes from a carefully-tended stable to some wretched outshed; and its new master is made happy if the crippled horse can only limp, and somehow get through a day's labour.

Clap of the back sinews results from violent exertion. It may be the work of an instant—very often whilst galloping over turf, when a sinew suddenly gives way or is broken. The horse sometimes is pulled up, or in severe cases it falls. If it be pulled up it refuses to move at a quicker pace than a hobble, and stands still again so soon as whip or spur are not applied to the sufferer's body. The maimed limb is flexed, and rests upon the toe of the injured leg. There can be no mistake now about the seat of lameness; the foot of the affected limb will hardly be put to the ground. The seat of the malady is soon declared. In a short space a tumour displays itself; it is small, hot, tender, and soft in the first instance, though it soon enlarges and grows very hard. The animal does not exhibit so much constitutional distress as might be expected from so serious an injury.

THE EARLIEST SYMPTOM OF CLAP OF THE BACK SINEWS, OR SEVERE SPRAIN OF THE TENDON.

Physic is necessary in this case. But the leg should be wrapped in a stout linen bandage; day and night the part should be saturated with the coldest possible water, until the primary symptoms have abated. Cut grass should be the food while any fever rages; and although the diet should be liberal it must not be of a too stimulating nature, as the inflammation has to be reduced; but at the same time the powers of reparation must not be retarded. The food may consist of bran mash, into which stir soaked oats intermixed with carrots, and rack up with cut vetches

THE BLEMISH LEFT BY CLAP OF THE BACK SINEWS.

or grass. The cold water should be continued till recovery appears confirmed; but it will be many months before the horse, thus disabled, will again be fit for full or energetic work. When the integrity of the parts has been re-established it will be wise to blister with biniodide of mercury, a drachm to the ounce of lard, and after its effects have passed off to turn out, during the spring or summer months, into a rich and well-sheltered pasture, during which time a feed of oats may be given it daily, as it will in a certain degree assist to keep up condition. A swelling after such accident is sure to remain throughout the life of the animal so injured.

SPRAIN OF THE BACK SINEWS.

Sprain of the back sinews of the hind legs is very general among amimals which have to perform slow work upon hilly roads. People in the carrier trade can afford to bestow small attention upon the lameness which does not incapacitate. Every journey, however, aggravates the disease. The horse works on till his owner is told by the blacksmith that the animal's legs are contracting, and higher caulkins are given as a cure.

HIGH CAULKINS.

The earliest attention commonly paid to sprain of the back sinews of the hind leg.

At length, however, caulkins become of no use. The work continues, and the disease progresses. The position of the foot is now so altered that the smith discovers his office is unable to render the animal useful. Perhaps these circumstances would little affect the owner, but the horse evidently loses power.

At last, the horse cannot guide the cart down hill, even when lightly loaded. Assistance is at first procured; but very soon the assistant has to do all the labour. The proprietor cannot imagine what ails his horse; it keeps getting worse and worse. He takes the animal to a farrier. Remedies—oils and blisters—are applied to no effect. A veterinary surgeon is consulted, and the master learns that the only hope left him lies in division of the tendons of the hind leg.—(See *Operation.*)

When a cart horse's heel heightens, always attend to the back sinews. Feel them gently, to discover if one place is more tender, harder, softer, or slightly warmer, than the rest. Should this not succeed, pinch them hard, and run the fingers down them, marking the part at which the animal flinches. Healthy tendon will endure any amount of pressure: diseased tendon is acutely sensitive. Having discovered the locality of the injury, order the hair to be cut short. Put a linen bandage round the lesion, and see that it is constantly kept wet; but do not expect a speedy cure. Those structures which are slow to exhibit disease are always tardy in resigning it. Bone and tendon are of this kind.

THE SURE RESULT OF CONTINUED WORK AFTER STRAIN OF THE BACK TENDONS.

Therefore, do not expect any relief before three months have expired, and it will certainly be six months before the horse is fit to resume labour. Do not blister, bleed, seton, or fire; these things are expensive, and occupy much time. Have patience. Grant the time which the supposed specifics would employ, and the effect, with or without their use, is very likely to be the same. The only remedy for a badly-contracted tendon is an operation, and to that subject the reader is referred.

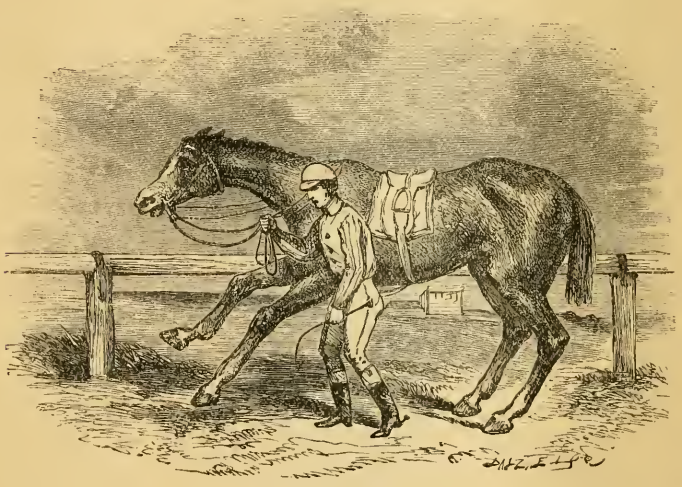
The horse, however, which has been subjected to such a remedy, will never be fit for its former uses. No art can restore the primary strength of nature, although human intelligence may arrest the progress of disease. The thought, that the consequences of ill-treatment are not always to be eradicated, should surely induce greater care of that property which, once lost to man, can never be replaced.

When a tendonous structure is injured, the best treatment is gentleness and patience. Blisters, setons, etc., can only change an acute disorder into a chronic deformity. Entire rest, with such applications as ease the attendant agony, and a sympathy that can afford to wait upon a tardy restoration, are better than all pretended specifics.

BREAKING DOWN.

Breaking down is the severest injury which the tendons can endure. In proof of this may be cited the general notion that, when a racer breaks down, some of the back sinews are ruptured. This, however, does not often occur; but though the tendons are, generally, only severely sprained, some of the finer tissues which enter into the composition of the leg are in all cases actually sundered.

The animal is at its full pace—doing its utmost and delighting



BREAKING DOWN.

its rider, who feels confident of coming in first. Instantaneously, the horse loses the power of putting one fore leg to the ground. The jockey knows what has taken place. He flings himself from the saddle, and hastily glances at the animal's foot. It probably is distorted, or perchance the accident may have taken effect higher up, and the injury merely be severe clap of the back sinews. Be it which it may, with a heavy heart at loss of money and credit, thus suddenly snatched from him, the jockey leads the horse toward the stand, or, by the shortest road, to the stable.

Many horses, after encountering this accident, are instantly shot.

The poor animals, by such a proceeding, are saved from a painful cure and a crippled existence. To an animal of motion, whose every feeling is displayed by means of its limbs, and which is instinctively more perfect in action than the most accomplished ballet-master, the encumbrance of a leg mis-shapen, callous and unwieldy, must be a serious affliction. The limb is spoiled for life, in the horse which has broken down. The pain, in time, departs; the breathing becomes quiet; the pulse sinks to the normal point; the appetite returns, and the spirits grow to be as high as ever. But no art can replace the structures which have been disorganised; and the limb, after everything approaching to inflammation has subsided, remains a huge, unsightly object,—an affliction to its possessor.

THE CONSEQUENCE OF "BREAKING DOWN" IN THE HORSE.

The treatment of breaking down should be similar to that of a broken leg in man; and the reviser has found good results follow the careful application of a starched bandage, which must be tightly bound round the leg from about three inches above the injury right down to the hoof; and the tension of the surrounding must be the same throughout its entire length. A high-heeled shoe will assist in easing the leg, and keeping the broken ends of the tendinous prolongations in apposition. An animal having met with this injury will never be again fit for racing purposes, neither will he be able to perform very usefully in any other capacity. However, should it be a stallion or a mare, it may be as valuable as a sounder animal for stud purposes. Accidents are not hereditary; nor is there any reason why the foal of a horse, which has broken down, should not excel the progeny of a more fortunate sire.

CURB.

This is one of the evils which chiefly are the property of well-bred horses, and often occurs during the act of rearing, or from any inordinate strain imposed upon the posterior parts of the hock. The malady consists of an enlargement, or a gradual bulging out at the posterior of the hock; and, when once extant, a swelling always marks the point where the injury was inflicted.

There is some dispute about the seat of curb. However, a slight acquaintance with anatomy assures us that the tendon must have been stretched when the sheath was injured, since the last invests and is inserted into the first. It is well known that synovial membrane is far more sensitive than tendon. It is therefore probable that the membrane would exhibit disease before the tendon displayed the slightest symptom of being affected. The membrane is also capable of displaying the signs of injury long after every trace may have disappeared from the tendon itself.

A CURB.

Curby hocks, or those exhibiting a rounded appearance at the back of the tarsus, are said to be liable to this accident, although

A CLEAN HOCK.

A CURBY HOCK, SLIGHTLY BULGING OUT BEHIND.

the accuracy of this assertion has been questioned by many authorities, and a case of a curby hock springing a curb has only once been met with in the practice of the reviser. That the reader may fully comprehend what is meant by a curby hock, one is here represented, together with a sound or naturally-formed clean joint.

AN INDIA-RUBBER BANDAGE, FOR KEEPING WET CLOTHES UPON A CURB.

The custom of blistering a horse the instant a curb appears is most injurious. Harm is done in every point of view by such a habit. The animal should have a high-heeled shoe put on immediately, so as to ease the over-strained tendon. The part ought then to be kept constantly wet with cold water, so as to lower or disperse the inflammation. It should not be blistered, to heat and increase the vascularity

of the structures. A cloth, doubled twice or thrice, is easily kept upon the hock by means of an india-rubber bandage, of the form delineated in the engraving at foot of previous page. Such a cloth, so placed, is afterwards to be made constantly cool and wet.

This treatment should be continued; the animal being confined to the stall and made to move as little as possible, until the heat and swelling are diminished, and the leg is almost sound. The part being quite cool, a blister should then be rubbed all over the joint; and with that the treatment, in the great majority of cases, is ended. On no account should any man allow his horse's hock to be fired for curb. This is a very general practice; but the author has never witnessed any good result therefrom. He has, however, seen much agony ensue upon the custom. The form of the marks perpetuated upon the skin of a living creature is shown herewith, and were plainly visible in the case of curb, which the writer dissected.

THE LINES MADE, FOR SOME IMAGINARY BENEFIT, WITH A HEATED IRON, UPON THE HOCK OF A HORSE HAVING CURB.

Pulling horses up on their haunches is asserted to be a frequent cause of curb; yet curb is not an accident commonly met with among those animals which drag London carriages. These creatures are

THE SUREST MANNER OF PRODUCING CURB.

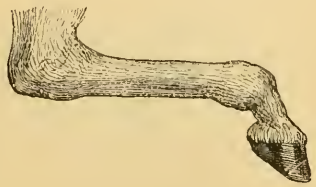
being constantly thrown upon their haunches, it being considered by ladies "very pretty and very dashing," to make their servants

tug at the reins, regardless of the living mouths on which these operate. Pulling suddenly up, however objectionable for other reasons, does not seem to induce curb, as London carriage horses are all but free from that affection. The disease is mainly caused by uneven ground wrenching the limb; by galloping at the topmost speed; by prancing when mounted, or by leaping when after the hounds. Perhaps more curbs are to be seen in a district on which several packs are kept than in any other part of the country.

OCCULT SPAVIN.

The horse is subject to many fearful maladies, but to none which is more terrible than ulceration between the bones composing the joints. Cartilage covers the articulatory surfaces of bones, and the synovial membranes surround them; they represent so many sacs for confining the joint oil within prescribed limits. Synovial membrane, cartilage, and bone, are without sensation during health; but when disease starts up, be it only the slightest blush of inflammation, the acutest anguish is thereby occasioned.

Ulceration of the joints is, unfortunately, rather common among horses; the animal, while being ridden, usually drops suddenly



THE EXTENT TO WHICH THE LEG IS CAUGHT UP WHEN OCCULT SPAVIN EXISTS; ALSO THE VIEW OF THE FOOT PRESENTED TO THE SPECTATOR WHO IS PLACED AT THE SIDE OF THE HORSE, WHEN, DURING THIS DISEASE, THE LEG IS IN MOTION.

lame. It has trodden on a rolling stone, or made a false step, or put its foot into some hole and injured the bone. After a little time, continuance of the impaired gait causes the rider to dismount; nothing is to be found in the foot, yet the animal is taken to the stable decidedly lame. The foot is searched; the limb is examined; pressure, even of the hardest kind, is endured

with provoking complacency. No heat or swelling can be discovered; but, one thing is to be discerned, the lameness is most emphatic. After some time, a peculiarity in the trot may be remarked; the lame foot hardly touches the earth before it is snatched up again, and that very energetically. Then, closer observation notes that the leg, when flexed, is alway carried in a direct line, as it is when displaying the symptoms of bony spavin. The hoof is never even partially turned outwards. Still, neither of these traits are always displayed in so prominent a manner as to force attention; frequently, a conclusion is to be drawn only from negative testimony—as the duration of the lameness, the soundness of the foot, and the perfect condition of the tendons. These evidences, taken with the suddenness of the complaint, cause the practitioner to comprehend he has a case of occult spavin under treatment.

This disease is usually caused by violent concussion to the hock. Sometimes the synovial membrane has been ruptured, or a bone injured or possibly broken. Upon such accidents ulceration may supervene and involve the part in disastrous disease and great suffering; for, at every step the animal takes, the ulcerated surfaces grate against one another, and at every movement pain is inflicted. All joints are exposed to ulceration; every bone in the fore and hind legs may be thus affected. The small bones of the hock are those most commonly diseased. Whenever this is the case, the only termination which can reasonably be hoped for is that the inflamed surfaces may be united. The bones are then bound together by osseous union, and are, of course, firmly locked; they are no longer capable of the slightest movement one upon the other. But this is no vast evil—many animals are now at work having the smaller bones firmly united by osseous deposit. Horses in that condition are far from useless, even for the highest purposes.

The man whose animal gets ulceration of the hock-joint ought to allow the injured quadruped even twelve months of uninterrupted rest. The first thing is to get the sufferer into slings. The earlier this is done the better. It takes off the weight from the affected joint, relieves the pain, and gives the system full opportunity to rectify the lesion. To draw blood to the part, and so promote deposit, rub in, once every two days, some of the

embrocation recommended in the article on "rheumatism," which is thus composed:—Of soap liniment, sixteen ounces; liquor ammonia, tincture of cantharides and of laudanum, of each two ounces. There need be no fear of applying friction; the utmost pressure made upon an ulcerated joint can call forth no response. When the joint is embrocated, wrap the part loosely in flannel, using an elastic webbing to fasten the portion above and below the hock, and not tying any fastening around the painfully-diseased member; give three feeds of corn, and sweet hay for each day's support, while the treatment lasts.

The improvement will be denoted by the animal bearing upon the affected limb. After three months, or longer, the slings may be removed; in another three months, the horse, should the pace be sound, may perform gentle work. However, the first three months must be reckoned from the date when the animal commenced to bear continuously on the ulcerated joint; in short, the slings are not to be removed until long after the quadruped has, by its carriage, declared them to be useless. Then, for the three subsequent months, the work must not be violent; time should be allowed for the union to be confirmed; for, among the many diseases the horse is exposed to there is not one more treacherous or more liable to relapse than occult spavin.

All this is necessary for the treatment of the disorder. Rest—perfect rest, with food capable of supporting nature in the reparative process, is absolutely indispensable. A loose box even does injury, so entire must be the rest, which should be as near to stagnation as it is possible to make it. The embrocation is simply recommended to draw blood to the part, and promote the required deposition. One caution only is necessary—give no purgative; keep the bowels regular by means of cut grass and bran mashes.

The principal treatment consists in constant rest, so as to insure the perfect immobility of the hock-joint.

RHEUMATISM.

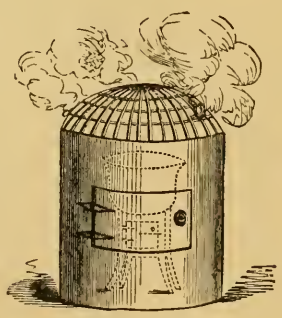
This form of disease in the horse is commonly known as following more serious affections. After influenza it is very frequent. It is not rare as coming in the train of thoracic disorders; most

important organs, being acutely affected, will leave it behind them. On rare occasions it may appear without any forerunner.

Its advent is announced by swelling about the joints, accompanied by the most painful lameness; the animal may not dare to put its foot to the ground. Often the disease flies about; now seizing upon one or two joints; next attacking the hitherto free members; and generally clinging to similar parts, as the hocks, knees, etc. Then it will return to its former abode, thus shifting about to the torture of the animal and the confusion of him who may undertake its relief.

One almost constant symptom is an increase of synovia. For synovial membrane, whether in the sheaths of tendons or on the heads of bones, rheumatism always displays a marked partiality. This structure is, as has been already noticed, without sensation during health; in disease, however, its involvement communicates extreme agony. The afflicted horse stands with difficulty; its pulse and its breathing declare its suffering. Both are quick and jerking; the limbs may be greatly swollen, and the parts secreting joint oil bulged out, soft and puffy, from the increase of their contents.

No disease is accompanied with such long and extreme pain as rheumatism; the remedies, therefore, should be quick and effective. Procure the steaming apparatus recommended for bronchitis; fill the warm, loose box, into which the horse should be brought, with vapour. While that is being accomplished get ready the slings; put the belly-piece under the animal, and fix them so as not to take the entire bearing from the ground, but so as to relieve the diseased joints of some portion of their burden, and allow the horse to rest its body when it is disposed to repose.



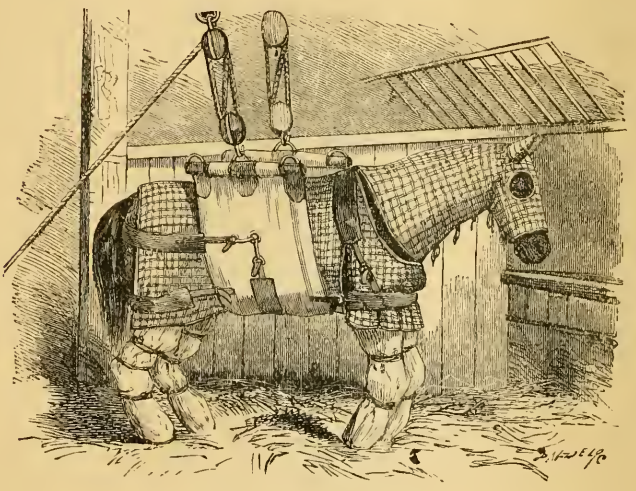
THE STEAMING APPARATUS USED IN BRONCHITIS.

Keep up the steam for one hour; at the end of that period have several men ready with dry cloths—whisps would be too exciting. Let the men wipe the horse quite dry with as little noise and as much speed as possible. This over, order some of the

assistants to put on the hood and clothing, also wrapping the sound limbs in flannel; the disengaged helpers are to go upon their knees and rub into and about the seat of disorder the liniment remended for occult spavin at page 332.

When the liniment has been applied encase the affected limbs in warm flannel.

Have ready some rings of elastic webbing to fasten over the members; also procure four pieces of flannel, each rather more than the length of a limb. To the small ends of two pieces of



A HORSE DRESSED FOR RHEUMATISM.

flannel, one yard and a half long, attach a band of broad elastic webbing, and fix a buckle and strap at the other terminations. At similar points of the other two pieces of flannel—only these last are to be two yards long—likewise fix broad elastic bands, and also append a buckle and strap. Place the long pieces of flannel by the hind limbs; put the shorter flannels by the fore legs; buckle the straps, the fore ones over the withers and the hind straps over the loins. This will keep the flannel up to its proper height; fasten it with the rings of elastic webbing to the hoofs, while the assistants are wrapping it loosely round the limbs.

The horse being in the slings no surcingle can be put on, nor is any needed. The animal with acute rheumatism is certain to

stand quiet enough. So much being accomplished, give the horse a bolus formed of powdered colchicum, two drachms; iodide of potassium, one drachm; simple mass, a sufficiency.

These measures are to be taken regardless of the condition of the body. If the attack, however, follow another disease, the bodily support must not be too low. It should be all prepared or softened by the action of heat and water; the oats should be of the best description; they should be crushed and boiled; a few old beans (also boiled) may be added, and a malt mash occasionally will do no harm. To open the bowels and likewise to allay excitement give green meat when required; but do not make a practice of allowing this sort of food in quantity, as it blows the animal out, weakens the digestion, and soon loses all laxative effect.

Next morning repeat the steaming, etc., and give a ball composed of three drachms of aloes; allow only five pounds of hay during the day. At night again steam, etc., and when the horse begins to bear upon its legs, should the liniment not have blistered the joints, the following may be applied with a soft brush, but without friction:—

Tincture of cantharides . .	One ounce.
Camphorated oil	Half-an-ounce.
Tincture of opium	Half-an-ounce.

The horse may be of a full habit when affected. In that case, pursue the measures already recommended, but do not give the food before advised; instead, allow bran mashes twice a week, and a bundle of green meat once a day, and sweet hay must make up the sustenance for twenty-four hours. Should the horse, however, appear to lose flesh and spirit, boiled corn must form a portion of the diet, and the quantity can be regulated only by him who has charge of the case.

The horse affected with this malady is highly sensitive, and should therefore be always treated in the most gentle manner. It must be approached noiselessly, and spoken to softly; nothing by word or deed must be done to arouse fear. A moment of excitement may do the injury which no physic will remove: nay, in critical stages, many a life has been lost from want of thought in the attendants about a diseased horse.

DISTENSION OF SYNOVIAL MEMBRANE—WINDGALLS.

Windgalls are generally lightly esteemed by most horsemen, when the animal is required for actual service—as hunting, racing, coaching, etc.

Such marks, however, are evidences of hard work having been performed. They are not natural formations, but are blemishes which man, in his consideration for a dumb servant, is pleased to make light of. They do not generally impede the action, and lameness is the only fact a true horseman cares to notice. He will not stay to inquire what must have been the kind of work which could occasion the synovial membrane to bulge out upon a living body. He does not care to ask whether nature, when deformity first appeared, instituted the fact without intention? He will not condescend to question, whether every unnatural appearance is not designed to be a warning. But he views windgalls rather as a proof that the poor animal exhibiting them

THE SITUATIONS AND SHAPES OF WINDGALLS.

WINDGALLS, AS THEY APPEARED TO THE AUTHOR UPON DISSECTION.

is a seasoned horse, and therefore is bettered by the distortion of a sensitive structure.

Windgalls are the result of severe work. The back sinews are encased in a fine sheath, which contains synovia, or, as it is commonly termed, "joint oil." The use of the synovia is to facilitate the motions of the two great flexor tendons one upon the other; so, when the pace is too fast or the labour too energetic, the deli-

cate membrane which secretes the synovia becomes irritated. The consequence of irritation is increased secretion. More joint-oil is poured forth than the natural sac can contain. The membrane, therefore, bags out at those parts which are weakest. Two such places are situated above the fetlock and one below it. The localities, with the size of the tumours, as they generally are exhibited, the reader will find delineated im the following engravings.

Windgalls generally appear on the hind leg, and are noticed in the hollow between the flexor tendons and the suspensory ligament, in which arteries, veins, nerves, and absorbents reside.

Windgalls usually occur on the hind fetlocks, because the posterior limbs do the heaviest portion of the horse's work. There may be one or three on both sides of each leg. They generally are quiescent; but occasionally they prove windgalls to be something more than the simple blemishes which man is pleased to esteem them. After a hard run it is not unusual to hear a huntsman complain that the windgalls have disappeared, and the back sinews of his hunter have become puffy. When that occurs, the entire sheath suffers excessive irritation, and has enlarged. The horse is then very lame, but a day or two of rest reduces the sudden enlargement, and the animal recovers its soundness.

THE DISAPPEARANCE OF WINDGALLS AND THE PUFFINESS OF THE SYNOVIAL MEMBRANE, PROPER TO THE FLEXOR TENDONS, WHICH ENSUES UPON EXCESSIVE LABOUR.

Sometimes, however, repeated irritation starts up a new action; the secretion becomes turbid, displays enormous floating threads of cartilage, and occasional sanguineous infiltration; the sac enlarges; the walls begin to thicken; the tumour feels less pulpy and more firm; it grows harder; first becomes cartilage, and ultimately may be converted into bone. Mr. Gowing, of Camden Town, has a fine specimen of this species of disease.

During these changes the animal is very lame; yet, windgalls are so lightly esteemed by horsemen as scarcely to lessen the price of a steed. They are, in general, accounted hardly worth mentioning, although men have been known to be strangely anxious to

have them removed. This, however, is not easy to bring about; all the common methods are worse than useless; the only treatment which promises any benefit is the application of pressure. Fold a piece of soft rag several times; saturate the rag with water; lay upon the wetted rag one drachm each of opium and of camphor, put these upon the enlargement. Upon the moistened rag place a piece of cork big enough to cover the windgall, and of such a thickness as may be necessary; above the cork lace on a vulcanised India-rubber bandage. Persistent and equal pressure will by these means be kept up; however, mind the groom be strictly ordered to take the bandage off the leg the last thing, when the horse leaves the stable, and to put it on again first thing on the animal's return, otherwise the proprietor may chance to enter the building and find his steed without an application which, to be beneficial, should be perpetually worn.

Such is the history and the occasional treatment of windgalls. A horse displaying windgalls is prepared for the advent of the more serious form of disease; still, horsemen will persist in deeming synovial enlargements a trivial affair, when seen in the body of a creature whose utility resides in its power to move the limbs with agility.

BOG SPAVIN.

It is well known that the seeds of disease are often sown during youth, when the colt is first introduced to work by the breaker, who, mistaking timidity for ferocity, applies harsh measures—whip and spur, which induces restiveness—in the place of suasive words and coaxing, which would give confidence to a naturally timid animal, and make it well-behaved.

The horse will respond to tender usage, but will resent ill-treatment. By the first, a useful servant can be secured; by the other, a wild beast. Man manufactures two commodities. "Utrum horum mavis accipe."

The cruelty practised on colts by breakers has ruined many and has injured others to such an extent as to have caused inflammation and swelling of the joints, but more particularly of the hock. In this position it constitutes the disease known as bog spavin.

This affection is an increase of synovia in the upper or chief joint of the hock; it lies upon the most inward and forward portion of that part. The increase of the contents causes the membrane to bulge out, after the manner represented in the accompanying wood-cut.

BOG SPAVIN, OR DISTENSION OF THE PRINCIPAL SYNOVIAL MEMBRANE OF THE HOCK JOINT.

It is produced by repeated shocks to the limb, and in this respect resembles windgalls; though situated in a different locality it is also liable to the same changes. In short, the affections are the same, and are dissimilar only with regard to their relative situation.

Bog spavin is thought slightly of by professed horsemen; however, the reader must ask himself, if it be viewed as no deterioration can it be also regarded as a recommendation? Is a blemished leg or a limb with disease, which is liable to assume an aggravated type, properly considered a sound member? Bog spavin does not, in its ordinary stage, lame the horse; but can such an unnatural enlargement add to the pleasure of the animal's existence?

Applications of various kinds have been recommended as treatment for bog spavin, but they have little avail in dispersing or absorbing the contents of an over-distended synovial sac, which has been caused by over-exertion and can be reduced alone by persistent pressure and rest.

THOROUGH-PIN.

This disease is so called because, in some cases, it pierces right through the thinnest part of the hind leg, or appears on either side immediately before the point of the hock. It, however, is often single, and is rarely present without bog spavin.

THOROUGH-PIN.

It is provoked by the same causes as generate bog spavin; it is similar to that disorder in not being generally accompanied by lameness, and in being liable to the same fearful changes. Pressure and rest are the best remedies; pressure, applied after the manner recommended for windgalls, may in some cases answer. The bog spavin and the thorough-pin, however, should not in every

case be treated at the same time; as a general rule, it is prudent only to attack one affection by means of an India-rubber bandage. This should be so cut as to release the bog spavin from all pressure; and where the slightest uneasiness is evinced all bandages should be instantly removed, while the corks and cloths (employed as for windgalls) are taken off the thorough-pin.

It is never well to attempt to cure the bog spavin first; the treatment ought always to commence with the thorough-pin. Therefore, for a horse which will not endure the bandage, a truss must be procured from the instrument maker. The truss is of the ordinary description, only, adapted to bear upon the parts. This will probably act with efficacy equal to the bandage. When the truss has performed its office, then a perfect India-rubber bandage may be safely applied. Only, mind and also employ with the last the corks and cloths; else, when endeavouring to remove one disorder you may reproduce another. Watch the animal while wearing the bandage; on the slightest change, either in habit or appearance, remove the India-rubber. Should the pressure affect the skin (as it will in certain cases), rags, thoroughly wetted, should be wrapped round the hock, before lacing the bandage up. If the rags appear to be of no avail, it is better to forbear for a time, and to renew the attempt hereafter.

The horse which exhibits bog spavin and thorough-pin also, generally shows windgalls on the hind legs. Let the reader consider the hard usage the limb must have undergone before it could have become thus deranged. Here is a specimen demonstrating the connection which exists between thorough-pin and bog spavin, the enlargement called thorough-pin and the synovial membrane of the hock having united so as to establish a free communication between them.

DISSECTION OF THOROUGH-PIN AND BOG SPAVIN, DEMONSTRATING THE JUNCTION OF THE TWO AFFECTIONS.

Thorough-pin is not, in popular estimation, essentially unsoundness. The subject of it may not be lame, and therefore move soundly, but no veterinarian would pronounce such animal sound; swellings on the hock, the result of synovial distension, represent decided unsoundness.

CAPPED KNEE.

Capped knee, in the fore limb, answers to bog spavin in the hind leg; the diseases are alike in most respects. Both affect the principal articulation of a complicated joint; both may be provoked by the like causes; but the fore leg being less exposed to shocks than the hinder member must have been much abused before it could become thus deformed.

Blows, also, are common originators of capped knee. This disorder is, likewise, peculiar for a course it takes. The fluid within the swollen joint is, upon excitement, secreted in such quantity as to tighten the enlargement. Ultimately, it lames the horse, and at length bulges out, or points, after the manner of an abscess. If let alone, it would burst. Much of the surrounding parts would have to be absorbed, or would be effectually destroyed before such a termination could ensue. The life would be endangered, or a lasting blemish would be left behind. To prevent this, the surgeon draws the skin to one side, and, holding the point of his lancet upward, opens the capped knee upon its lower surface. A quantity of synovia, more or less in a turbid state, escapes, and an open joint remains. For the treatment of this contingency, the reader must turn to "Open Joint, p. 447" (*Injuries*).

THE SYNOVIAL MEMBRANE OF THE KNEE-JOINT ENLARGED.

Capped knee is, by certain persons, viewed as a trivial accident. Generally, however, it is regarded in a more serious light, because it is *more conspicuous* than bog spavin. We also should object to it, because, while liable to the same changes as windgalls, etc., it is also likely to expose the horse to an open joint. It is, like windgalls and bog spavin, to be reduced by pressure, though sometimes pressure will call up aggravated symptoms. Rest is the best treatment; during the rest, pressure may be safely applied. Pressure does not answer, however, while the limb is exposed to the irritation of work. The horse must be thrown up, during treatment, and gently used after it has been patched up or "cured."

CAPPED HOCK.

When an injury is formed near an important part, nature is so conservative of her creature's welfare that she always has some means

ready to preserve the utility of the structure. Thus, when from external violence the hock becomes capped, or a swelling like to that represented in the following engraving ensues, to prevent the joint being thrown out of use nature allows the skin to enlarge. The cap of a hock, originally, was a bursa. A bursa is a little bladder or round sac, formed of the finest possible membrane, and filled with a fluid similar to joint oil. Its use is to facilitate motion; hence, one eases the tightened skin over the point of the bony hock. But when it becomes deranged and swollen, the skin, which was dense, hard and solid, stretches so as to cover the increase of bulk.

CAPPED HOCK.

THE LARGEST SPECIMEN OF CAPPED HOCK WHICH THE AUTHOR HAS MET WITH.

The tumour, however, having been produced may in time subside, should the injury which provoked it not be repeated. Too often, however, the cause springs from motives over which the animal has no control; and the violence being renewed again and again the swelling enlarges, and that which was soft and pulpy at first becomes hard to the feel, while all sensation of fluid disappears. The provocative being repeated, the part first grows firm—then solid—while its bulk also enlarges to a fearful magnitude. There appears to be no limit to the size; some are very large, some small.

Any injury or blow to the point of the hock may cause it to enlarge. By lying with the hocks exposed at their points to the hard stones, which often happens to horses who are in the habit of scraping their litter to the sides of the stalls, and thus leaving a bare place to lie on, this injury caused by constant hard pressure ultimately involves the horse in the disease under notice.

Another cause is kicking while in harness; this habit is always attributed to vice. To speak of vice, as associated with the ideas of a

simple animal, is purely ridiculous. Fear is a much more probable cause. If man would only expand his understanding to comprehend the motives likely to actuate an unreasoning creature he would see that vice is far too heroic an impulse, far too human a failing for the horse to embody. Fear is essentially an animal passion; that some mighty influence agitates the quadruped when it begins to kick in harness is proved by the serious accidents the horse encounters through this habit. No life can be careless of its own existence; all creatures are conservatives where their own being is concerned. Would mankind only admit this fact, and seek to gain the confidence of, as they now labour to establish authority over, the horse, gentle words, spoken when the impulse was awakened, might reassure the animal, and would thus frequently save the owner from impending danger.

A third cause is lazy drivers riding on cart-horses, when unhooked, as leaders of the waggon; the poles, called spreaders, which keep the chains asunder, frequently hang so low, that at every movement of the leg, they strike the point of the hock. The uneven paving of some stables is likewise said to produce the disease; in short, anything which may cause the point of the calcis to suffer violence will produce a capped hock.

The treatment must be guided by circumstances; the tumour, when recent, being hot and somewhat painful. At this time, keep it wet with cold water or with a lotion formed of spirits of wine and water, in equal parts. When the tenderness has subsided, cause your groom to rub the cap of the hock constantly, and the tumour, in three or four days, or in less time, will have disappeared.

Should the enlargement, however, have become hard, the knife then must be employed; the horse must be cast, and the substance must be carefully dissected out without opening the sac. This being done, remove none of the skin; leave that bagging about the hock; simply treat it with a lotion composed of chloride of zinc, one grain, to water, one ounce, and the integument will contract. Ultimately, there will remain no more than will be required to cover the part; whereas, if any be taken away, the wound, which in these cases never heals quickly, will be very long

THE SKIN FROM BENEATH WHEN THE TUMOUR OF CAPPED HOCK HAS BEEN REMOVED.

before it closes, and, in proportion to the skin which has been removed, there will remain a lasting blemish.

There is another caution we have to give the reader before leaving this subject: let no advice persuade, no temptation induce him to puncture, seton, or merely to open capped hock. The membrane lining the swelling is, when diseased, so extremely sensitive, that the writer has known the lives of animals endangered by these so-called remedies. Extirpation is the only remedy, and it should be accomplished without puncturing the sac; this is as safe an operation as there is in the entire range of Veterinary Surgery. There is neither nerve, muscle, membrane, vessel, or any important structure to avoid; with ordinary care the removal is most easy. There is but one thing annoying connected with the business, and that is the length of time which the healing of a necessary wound, made upon a point of motion, almost invariably occupies.

CAPPED ELBOW.

This is very common, especially among cart-horses; it is attributed to the caulkin of the fore foot; to the point of the hind hoof; or to a stable floor, thinly bedded, and composed of sharp stones. So, likewise, blows with the butt end of the whip will induce it; but the harness, probably, guards the elbow, which therefore can be struck only in exceptional cases.

A CAPPED ELBOW.

It consists of a bursa which, as in the former instance, has been injured, and has consequently enlarged; in appearance, and in its subsequent course, it greatly resembles capped hock, from which it differs only in a greater liability to ulcerate and become sinuous when allowed to remain until it is of extreme magnitude. It is said to derive that unenviable peculiarity from being situated nearer to the centre of circulation. Capped hock is little disposed to take on such a form of disease. With a tumour on the elbow, however, ulceration is unfortunately too common. That probability should forbid the owner to allow the tumour to attain any great size; when large, moreover, it is apt to encircle the elbow joint. It, however, may be easily extirpated by a competent

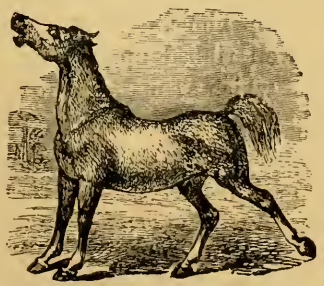
veterinarian, and the after-treatment should be the same as that prescribed for capped hock.

LUXATION OF THE PATELLA.

Displacement of the patella (the bone which answers to the knee-cap of the human being) is an accident of rare occurrence among horses. It is not peculiar to any district; it is not confined to any special breed; it may affect all kinds of horses in all sorts of places.

Colts frequently exhibit luxation of the patella before they are broken; but it is always provoked by weakness, and commonly only seen where the management is faulty or the food is stinted.

When the whirl-bone is displaced, it is always found as an unnatural lump upon the outer side of the thigh; it cannot, for three sufficient reasons, be drawn to the inner part of the leg. The inner condyle of the humerus, over which the patella plays, is sufficiently large to oppose any unnatural motion in that direction; the inner ligaments are the weakest, and are, therefore, most readily stretched in the outward direction; the circumstances permit the bone to be displaced from the inside of the leg. Then, moreover, the muscles are altogether more powerful upon the outer side. Any force acts more energetically as debility increases, and to favour it there is less resistance in the direction opposite to which the force pulls; for these reasons, the bone invariably is luxated upon the outer side of the animal's haunch.



THE PATELLA, OR WHIRL-BONE DISPLACED.

The symptoms denoting luxation of the patella are: the leg thrust out behind, and remaining fixed; the horse's entire frame

is affected; the head is erect; the muscles quiver; the pastern of the protruded leg is violently flexed; there is an unnatural swelling upon the outer and lower part of the buttock. If the animal be forced to move it can only imperfectly hop upon three legs; such an accident may occur at any time, and never be repeated. It may, however, become so common as to be mistaken for a species of habit; for luxation of the patella, when by frequency confirmed, will take place upon the slightest possible cause.

In stinted colts, the most trivial motion often will give rise to this accident; the creature can hardly move without its leg being thrust out behind it. The cure is in these cases, anything which may flurry the animal. A noise, made by moving the hand quickly and rather energetically, from side to side, within a hat,—the crack of a whip,—or any sudden and loud sound, will occasion the bone to return with apparent ease and the utmost rapidity to its natural situation. The colt, however, may the next moment exhibit the misfortune which, in young life, can only be cured by kindly treatment and liberal sustenance.

Probably the author will best describe the nature of the affection in old animals by narrating a case which, a few years ago, came under his own observation.

At the request of a friend he visited one of those auction marts for the sale of horses, which in London are somewhat notorious. The object of his visit being, if possible, to purchase, his attention was directed to certain animals. As usual, a glance enabled him to pass by all the marked "lots," and he had reached the third stable, when his eye rested on a horse which seemed wrongly placed among such companions. It was lively, young, clean-legged, short-backed, well ribbed up,—in fact, one of those rare creatures, every inch of which seems made for service. The height was fifteen hands, three inches; the colour was a dark brown. The author tried in vain to discover if it had any "vice." It appeared perfectly quiet. He examined the feet: he could detect no unsoundness. He went to the office and ascertained the price—twenty-four guineas! It was too cheap! Such an animal would be thrown away if sold for fifty guineas. "Would they give a warranty?" "It was not their custom to give any warranty." "Had the horse megrims?" "No." "Would they grant a trial?" "It was contrary to their rules." Still the author wanted to buy

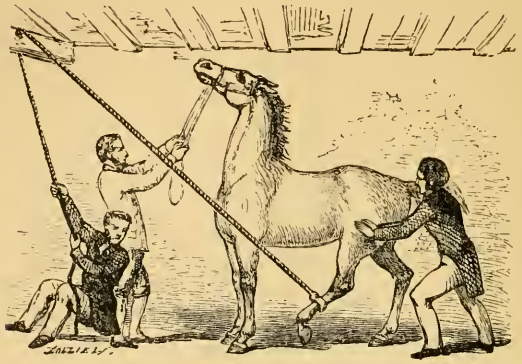
—he would "deposit the cash, and, if all proved right, take the horse." "They never granted trials; but there stood the owner—the writer could talk to him."

The person alluded to was lounging close to the writer's elbow, and was habited in that half-blackleg, half-blackguard costume which characterises the low London dealer. The contemplation of this individual did not improve any previous opinion of the matter. However, the man's eye was firmly fixed upon that of his would-be customer, and rather than encounter a disturbance the author approached the fellow, to whom he repeated his requests. The answers given were too similar to those received from the clerk for the likeness to be purely accidental. The dealer, nevertheless, saw a trial was imperative to convert the inquirer into a purchaser; and rightly judging from appearance that there was little of the jockey in the writer's attainments, reluctantly consented to afford the demanded test.

The horse was speedily between the shafts of a very light gig. The man took the reins, placed the whip behind him, and we moved off at the gentlest of possible trots. No objection was taken to the pace: it gave the better opportunity of examining into the soundness. All was right in that particular. The steps were loud and even. After some time, during which the man frequently inquired if "I had had trial enough *now?*" we left the paved streets, but no entreaty could cause the pace to be improved. At length we came to a rise in the ground, when, as it was approached, my companion turned sulky. Hardly had the horse begun to ascend the inequality, before it suddenly stood quite still. The gig was brought to with a jerk, which almost threw both its occupants upon the footboard. The author was the first out of the vehicle. There stood the horse,—the leg out, the foot flexed, the head erect,—displaying the evident symptom of luxation of the patella.

An inn was fortunately near the spot. To the yard of the hostelry the animal was with difficulty led. Being sheltered in an unoccupied building a groom was placed at the horse's head. A long rope, thrown over a beam, was fastened to the fetlock of the protruded limb. By this rope the owner stood; and whilst he pulled the leg upward and forward, the writer was by the quarters, with both hands pushing the luxated bone inward. The patella soon slipped into its situation, and the horse was afterwards sold

by auction for four guineas more than the author had refused to pay for it.



THE MANNER OF RETURNING THE PATELLA OF AN ADULT ANIMAL.

Mr. Spooner, in his lectures at the Royal Veterinary College, always recommends his hearers, after this bone has been returned, to place an assistant by the horse's side, with strict orders to hold the patella in its situation for some hours. Such advice is most excellent, to which we can only add perfect rest, and as much strengthening food as the animal can consume. If such measures are pursued, and the horse be not used for six weeks subsequent to the accident, there need be little fear entertained of a second luxation of the patella.

BLOOD SPAVIN.

This disease is happily seldom met with now. It is more of a

A BLOOD SPAVIN AS IT IS REPORTED TO HAVE ONCE EXISTED.

disease of the past than the present. It consisted of a varicosity[1]

of the vena saphena, where the vessel crosses the hock. The cause is said to have been bog spavin, when of magnitude; this, it is asserted, opposed circulation within the vessel.

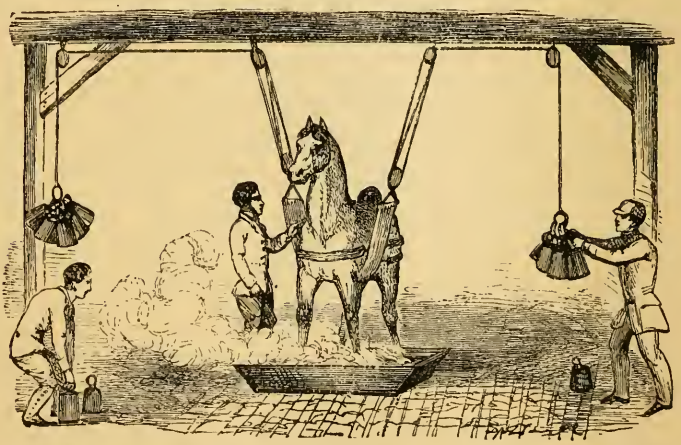
There is no cure for such a disease. The knife may remove the deformity, but a larger blemish was often left as the consequence of the operation. Should such a case be known to any of the present readers, it is best to leave the enlargement alone and trust to the absorbing powers of nature for its removal.

CHAPTER XIII.

THE FEET—THEIR ACCIDENTS AND THEIR DISEASES.

LAMENESS.

Of all inventions intended to mitigate the sufferings of the horse none perhaps is so generally useful as the foot-bath; certainly,



A READY MEANS OF SOFTENING THE HORN, WHERE PRESSURE OF THE HOOF AGGRAVATES THE LAMENESS.

not one is so decidedly beneficial in its operation. It consists merely of a wooden or iron trough, one foot deep; the shoes of the animal should, if possible, be taken off before the hoof is allowed to tread within the bath; or, if such a measure be not possible, then the burden of the horse's body should be counterpoised by means of weights. This precaution is always prudent, for, should the shod horse occasion fracture or breakage, an alarm might be

excited which probably would ever after prevent the employment of the foot-bath with the same quadruped.

The water should always be mixed outside the building; it is never well to excite an animal's fears by allowing it to witness unnecessary preparation. Most people assert the horse has a very limited comprehension—so it may have; but it has an active terror which is apt to misconstrue the simplest of motives. Whoever has seen the busy eye of the quadruped watching all that takes place around it, and noting every triviality whenever any unusual movement gives intimation to the animal that something is about to be attempted, will readily allow the need there is for excessive caution. The horse may comprehend nothing, but it is not, therefore, the less to be propitiated. Its terror has to be soothed and its confidence has to be gained; the last is soonest won by avoiding anything which possibly might excite the first.

Always have the heat of the water ascertained by a thermometer. Sensation is only a relative test with regard to the presence or absence of warmth. Were it not so, the hand of a groom, nevertheless, might easily endure that degree of temperature which should pain the foot and leg of a horse. Let the fluid, in the first instance, stand at 70°; after the animal has entered the bath, gradually and without noise increase the temperature up to 90°.

At that standard the water ought to be maintained: the hoof should remain soaking from one to two hours at each operation. The groom, doubtless, will complain of having frequently to fetch warm water, and, when not so employed, of being obliged to watch a thermometer; but the present book is not written to please the likings of any individual. To contribute to the welfare of the horse is the object of the writer; that he has not unnecessarily imposed an irksome duty upon any human being, the purpose for which the bath is introduced into the stable should be sufficient evidence.

The horse's hoof is of considerable thickness. It is far from unusual with stablemen to saturate the healthy hoof with various greasy preparations; therefore, it will require some time before the heat and water can soften that which is, as it were, prepared to resist their action. The hoof should be rendered perceptibly soft when the object is to relieve a painful lameness; the warmth

and moisture should not only saturate the covering to the foot, but should also soothe the internal structures. The pressure of the horn may thus be mitigated, and the deep-seated inflammation likewise be ameliorated.

When the bath is removed, the foot should not be left exposed to the air, as the horn then quickly dries; it soon becomes harsh and brittle. In this condition it is likely to do more injury to the sensitive parts than good was anticipated as the consequence of its immersion. The hoof, when taken from the water, should be encased in warm and air-proof bandages; the intention being to retain the heat, while evaporation is prevented. The bandages likewise answer another purpose: they protect the foot, which, being without a shoe, and covered by horn that has been deprived of its resistant property, is therefore much exposed to accidents.

To obtain the full benefit of the bath the foot should enter it night and morning; the animal should be subjected to its operation for at least four hours each time, and ingenuity ought to be exerted to prevent the hoof from becoming dry in the interim. Perhaps nothing is better for this purpose than the leather case, which is lined with sponge, and which can be procured of most tradesmen who deal in veterinary instruments; it is made to fit the foot, also to envelop the pastern. The bottom portion is formed of the stoutest leather, and will afford all desirable protection; while the sponge will retain the moisture which this material permits to be renewed, should circumstances, such as the heat of the hoof, or the warmth of the weather, cause the fluid to evaporate. However, such additions must always be made with warm water, cold being unsuited for the purpose.

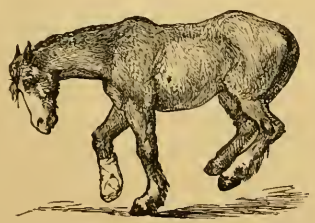
These particulars have been thus fully detailed because lameness constitutes no inconsiderable portion of equine misery, and because such ailments are more frequently encountered than special forms of disease. To judge quickly and surely of such affections proves, in no small degree, veterinary proficiency; in every shade of lameness, the gentleman, unless more than usually practised in such ailments, had better be guided by an educated opinion. Where it is possible to mistake another's misery, it displays no boldness to risk chances upon our own judgment.

Lameness is simply the difference of bearing cast, during progression upon the several legs. Pain in the joints, bones, or tendons

is most severe. It is even more terrible when inflammation of such structures is confined within the horny hoof. Of this torture man can know nothing; he may rest the angry limb; may recline the body; or may seek consolation in friendly converse and in mental diversion. From all the higher pleasures the horse is excluded. It cannot rest the leg; and the instinctive dread which the sick animal displays of being unable to rise again prevents the quadruped seeking that relief a change of posture might afford.

The horse always stands when seriously diseased. Often the erect position is continued to the last; for the sufferer ceases to maintain it only with the relinquishment of life. During severe lameness in one foot the animal seldom lies down; it stands and stands, often for months. How the limbs must ache! Yet the relief which the slightest motion might induce is avoided with the tenacity which pain begets when operating upon excessive timidity. Often one spot is occupied for months! During this tedious period, one foot is held from the earth. The mind shrinks from conjecturing the torture which could prompt such an act; the reason retreats from contemplating the agony by which the deed can alone be occasioned; we shudder, as the imagination remotely pictures the pains by which it must be accompanied! Yet, who has been much among stables, and has not witnessed many such sights?

It requires small knowledge to recognise those lamenesses to which the heavy breed of horses is particularly exposed to. Agony, being excessive, always obliges this species of animal to indicate

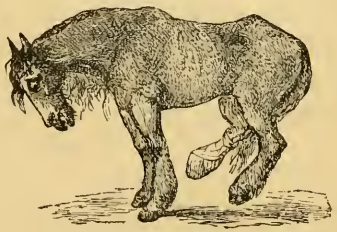


THE MANNER IN WHICH THE HORSE PROGRESSES WHEN ONE FORE LEG IS INCAPACITATED.

the limb, or to attract the attention of the spectator towards it. These creatures, when thus affected, if compelled to move, hop onward upon three legs; the weight is never thrown upon the foot which has been severely injured.

Illustrating this subject is the preceding figure of a horse which has been hurt upon the off fore foot; the figure is supposed to be desirous of progressing, or to be in the act of bringing the hind limbs forward. The entire weight having for a certain space to rest upon a single support, some time is spent in accurately balancing the body before this action is hazarded. The slightest mistake would necessitate a fall, of which it has been observed the sick horse is endued with a particular dread. Therefore, after a certain time spent in preparation, the legs are with much muscular exertion lifted from the ground, and the sufferer hops onward.

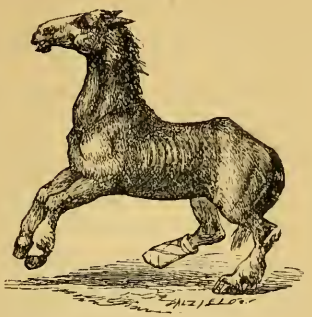
The wretchedness of the quadruped, however, is not complete, until one or both hind legs are implicated. From some hidden cause, the anguish of the animal, great as it may be, is not perfected while the lameness resides in front. The horse, suffering in a fore limb, has even laid on flesh during the period of enforced idleness. But, when the posterior extremities are injured, the constitution is involved. The body wastes rapidly, and every fibre within the huge framework seems to quiver with sensibility.



THE MANNER OF ADVANCING THE HIND MEMBERS, WHEN ONE POSTERIOR FOOT IS INJURED.

If the creature, thus disabled in one leg, is obliged to advance, the chief difficulty is to so placing the sound limb upon the earth that the balance shall not be destroyed. There are the two fore legs to rest upon, and the head to act as a kind of counterpoise. Therefore, there is little impediment to raising of the trunk; but the obstacle consists in the peril to be surmounted, when the sound member reaches the ground. A certain shock has then to be sustained, and the fear apparently is lest the slightest want of preparation should bring the body to the earth.

The next motion delineated necessitates the greatest care and the mightiest exertion. There are several signs which declare such to be the case. To advance the two sound fore legs is an effort of despair always preceded by a pause. During the time the feet are from the earth, the entire weight, unrelieved by the slightest counterpoise, must be supported by one sound limb. The muscles on that side have to raise the trunk, or to perform double labour;



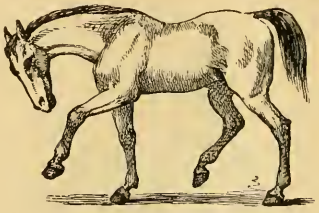
A HORSE HAVING ONE HIND LEG RENDERED USELESS, BY A SUDDEN EFFORT ADVANCES THE FORE LIMBS.

for the step invariably is a species of leap. The body has not only to be lifted, but the strain must be maintained to continue or rectify the balance. A pause of more than ordinary length declares the magnitude of the approaching struggle. The teeth are clenched; the head is thrown backward; a deep inspiration is inhaled; the muscles are powerfully excited; and, with a spasmodic suddenness, the feet are projected onward.

The step accomplished, the breath is released in a kind of heavy sigh; the animal remains quiescent for a brief space, as though the greatness of the late effort had partially deprived it of consciousness. It is, however, an exceptional case for a horse of the lighter breed to be thus "hopping lame." In all animals, nevertheless, lameness is a heavy affliction. In all, the manner of progressing is characteristic of pain. Suffering, more or less intense, is declared every time the injured foot touches the ground.

One fore foot being affected, the head and body drop, or slightly sink, whenever the sound member rests upon the earth. This peculiarity a little reflection will readily account for. Of course, the desire of a lame animal is to spare the disabled foot as much as

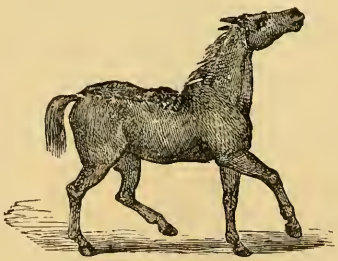
possible. The injured part scarcely touches earth before, with an effort which raises the head and body, it is lifted again into the air. The least possible burden is thrown upon the disabled foot. However, the weight must be cast somewhere; and by how much less one leg has to carry, so much more must the other support. Consequently, when the sound hoof comes to the ground, the extra



A HORSE IN THE ACT OF TROTTING BEARS THE WEIGHT UPON THE SOUND FORE FOOT.

burden rests upon it; the head and body perceptibly drop, and the footfall emits an emphatic sound, the accent of which is increased by the all but inaudible tread of the opposite member.

The indication, however, is in some measure reversed when the lameness is situated behind. The movements of the head no longer



A HORSE BEING LAME IN ONE HIND FOOT, RESTS THE WEIGHT UPON THE SOUND LIMB WHILE TROTTING.

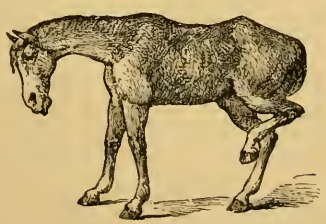
accompany those of the fore legs; for, although the head be not steady, it evidently is not influenced by the forward members. If, however, the motion be closely observed, it will be found to be regulated by the movements of the posterior extremities only with a difference. When the sound hind limb rests upon earth, the head is raised; but the sinking or elevation of the whole body is

never so marked as it is in the previous case of anterior injury. The movements characteristic of posterior lameness are, however, well shown in the haunches. When the sound limb reaches the ground the hind portion of the body obviously drops upon that side; when the painful member is caught up, that side of the haunch on which resides the disabled foot is also jerked upward.

There are other sorts of lameness to be described. A horse is sometimes returned by the smith lame all round. The gait is peculiar, because it is caused by the shoes being too small or tight. It has been likened to skating. There can, however, be then no difficulty in detecting the cause of the affliction. The horse was, a short time hence, sent to the forge a sound animal, and it has been returned a positive cripple.

It is lamentable to remark the number of horses which are driven through the streets of London in a disabled condition. People appear to be without feeling or observation when the sufferings of horse-flesh are before them. An animal with scarcely a sound limb, or else "hopping lame," may frequently be seen, in broad daylight, attached to some gentleman's carriage or tradesman's cart, to a hired vehicle or a costermonger's "all sorts." From the highest to the lowest, all are equally disgraced; the toil of a life seems incapable of purchasing a day's commiseration.

Other forms of suffering than those confined to the feet affect the progression of the horse; the "whirl-bone" or hip-joint is



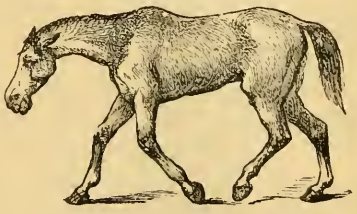
ACUTE LAMENESS, CAUSED BY ULCERATION WITHIN THE HIP-JOINT.

sometimes visited by ulceration. The symptoms then, in a degree, resemble those exhibited when occult spavin is present; the affected limb is, however, after touching the earth, caught up more sharply

when the hip is diseased. The hoof, moreover, is presented more fully during motion in the last-mentioned affection. The best method, however, to ascertain the existence of the ulceration is to hold some soft substance over the joint, then to strike it with a mallet; the shock will be communicated to the seat of lameness, and elicit an energetic response.

Nothing can be done for such a condition. Certain barbarities are proposed as experiments by continental veterinarians; but man obviously has no right to run chances with cruelty practised upon breathing life. Hip-joint disease is decidedly incurable, and renders every step a separate agony!

The shoulder is a very favourite seat of injury with those who pretend to a knowledge of equine ailments. With such simple folk, if a horse be lame behind, the cause is always traced to the whirl-bone; should an animal have partially lost the use of an anterior limb, the injury is invariably found in the shoulder. The proof of their correctness is always exhibited in the lessened bulk of the parts referred to; but throw a limb out of use, as lameness in the horse always does, and the absorption of the whole extremity from want of exercise naturally ensues.

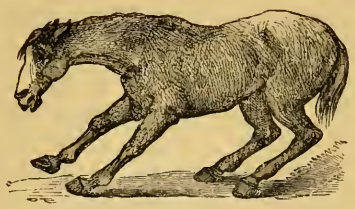


DRAGGING THE LIMB, THE INDICATION OF SHOULDER LAMENESS.

The shoulder-joint is occasionally ulcerated; but more often disease is found upon the tendon of the flexor brachii, a muscle which, arising from the shoulder-joint, is of service in flexing the radius. In both cases the seeming length of the arm is remarkable; so also is the fixedness of the shoulder and the obstinate refusal to advance or to flex the arm. The consequence is, that a horse with disease of the shoulder drags the limb, and never lifts the toe from the ground.

Ulceration is sometimes, though rarely, witnessed within the

elbow-joint. A case of this description is recorded by the late W. Percival. The chief symptom indicated sub-acute laminitis; the affection appeared gradually, and without intermission proceeded from simple bad to the very worst. The foot was, however, neither hot nor tender. By this sign the affection was distinguished from every form of fever in the feet; although the animal endeavoured to bear only upon the heels of the fore extremities, and brought the hind legs as far under the body as was possible.



THE MANNER IN WHICH A HORSE HAVING ULCERATION OF THE ELBOW-JOINT ENDEAVOURS TO PROGRESS.

Disease of the knee-joint, more properly wrist, is manifested by stiffness and protrusion of the fore leg, and incapacity of flexion in the diseased limb; and the subject of it, when standing in the stall, always knuckles over, an indication either of bony deposit on the knee or contraction of the tendons at the back part of the leg. When it lies down, the limb cannot be placed in any easy position. It is usually stretched out away from the body, or rested in any way calculated to afford the greatest comfort.

THE HEALTHY LEG WHEN THE HORSE IS LYING DOWN.

THE NEAREST APPROACH MADE BY THE HEEL TO THE ELBOW IN CERTAIN CONDITIONS OF THE KNEE-JOINT.

No human lamentation could embody the deep sorrow which the crippled condition of one leg occasions to the horse. The creature thereby is left a clog upon the earth. Its existence is

deprived of the power which alone made it pleasant. Progression is laborious, and even rest is painful. The quadruped, thus disabled, stands motionless on one spot; the head is lowered; the eyes are dejected; the breathing is fitful; and the entire frame is apparently resigned to a huge sense of degradation. All the pride of life is lost. Every trace of animation has fled. The animal evidently is, in its own conviction, useless and disgraced. A horse in such a state is indeed a melancholy spectacle; and the feelings of that man who, understanding the image, can contemplate it unmoved, are not to be envied! Still, for how many years has such a sight been before the eyes of mankind, without any individual possessing the heart to interpret it!

Sometimes good may arise from evil, as a vicious horse with acute lameness can be subdued and rendered tractable; for the animal, when lame and in suffering, will disregard the approach of anyone, and allow the legs to be handled. When it finds that kindness is intended, the gentleness of its nature will respond to such treatment. It is astonishing how quick affliction is to comprehend humanity.

Little can be said concerning the cure of lameness. The causes are various, and of course the remedies are as numerous as the provocatives. One thing may, however, be advised: have the shoe taken off and the foot searched. Never mind the horn being pared away—many a horse limps upon a whole hoof; and it is astonishing upon how small a portion of horn an animal may go sound. The seat of the injury being ascertained, and so much of the inorganic covering removed as may be necessary to afford some relief, always soak the foot in the bath before permitting the final use of the knife. The water cleanses the part, favours the discharge of pus, lowers the inflammatory action, softens the anguish, and destroys the harsh character of the dry horn. This last substance, as was observed, by the united action of warmth and moisture, loses its resistant property. It cuts easily when newly released from the bath; and, if the knife be sharp, it may be excised without any of that dragging sensation, which frequently provokes the animal to snatch away the member while it is being operated upon.

PUMICE FOOT.

Is noticed in animals bred on a marshy land, and of a loose habit of body. They are apt to have weak feet, a specimen of which is given below, though not of one belonging to the heavy cart-horse. All the delineations inserted in this book are, necessarily, extreme cases. It is easy for the imagination to soften the evil when the mind is impressed with characteristics of the thing which is depicted, but not always so free from difficulty for an untutored imagination to magnify a reduced portrait.

A weak foot has a long, slanting pastern; the hoof is marked

A WEAK FOOT.

THE SOLE OF A WEAK FOOT.

by rings, showing the irregularity of the horny secretion; and the crust is broken in those places where nails have been driven to fasten on the shoe, proving the brittle nature of the hoof.

Such are the outward signs of a weak hoof; but if the person beholding that sort of foot be in any doubt let him lift it from the ground and inspect the sole. That part will also present peculiarities which can hardly fail to attract attention.

The sole of a weak foot has a thin and irregular margin of crust; a flat surface; well developed bars, and a healthy frog. Creatures with this kind of hoof, when brought to work upon hard roads or London stones, are apt to throw the foot down with heedless force at every step, and thereby soon to bruise the sole. These horses generally have high action, and this circumstance lends additional force to the blow; the injury reaches the coffin-bone, which begins to enlarge, and ultimately forces the horny sole outward. A pumice foot has the appearance of the member

represented below, though the reader must not anticipate the illustration will accurately indicate every stage of the disorder.

Feet of the above description generally have very weak and brittle crusts, but the frog almost invariably is large and prominent. There is no kind of foot which so generally exhibits a healthy frog; and underneath will be seen an engraving of the ground surface of a pumice foot, in illustration of the fact.

There are many methods proposed for amending a pumiced foot. One is the removal of the shoe; then allowing the deformed foot to stand a certain portion of time upon flat flag-stones. But

THE SIDE VIEW OF A PUMICED FOOT.

Showing the swollen or rounded state of the sole, with the brittle and uneven condition of the crust.

THE SOLE OF A PUMICED FOOT.

Displaying a ragged wall, and exhibiting a very healthy frog and a bulging sole.

as stamping the foot upon stones produced pumice foot, prolonged stress thereon does not seem calculated to remove the deformity. A pumice foot is not a lump of pudding, to be flattened by simple pressure. In the horse's hoof there is bone and flesh to operate upon. Even supposing the standing upon flag-stones was beneficial, what immediate result could be anticipated from a medicine which was to be administered once in three weeks and for half-an-hour only at each application.

Another artifice is to draw a hot iron over the sole at every shoeing. The intention is to stimulate the horn, and thus render the sole of greater thickness. But that which may affect the secreting membrane of the foot may also stimulate the bone to which that membrane is attached. Thus, the intended remedy may turn out to be a positive aggravation. There are also other methods of intended relief, but all are equally useless.

The only means of real benefit lies in the treatment of the hoof and in the mode of shoeing. For the last, select what is denomin-

ated a "dish" shoe, which is a bar shoe well seated out, *i.e.* having the web hollowed out like to the sides of a pie-dish. The only part of this shoe which touches the ground is the rim of the inner circle.

This kind of shoe will protect the bulging sole, and if shod with leather the protection will be greater, though the shoe will, in that case, be more difficult to retain. The flat surface, at the posterior part of the shoe, presents a point for the bearing of the frog, which can afford almost any amount of pressure. The many nail-holes

A PUMICED FOOT DIVIDED.
Showing the altered state of the internal structures.

A DISH SHOE.
Employed in cases of severe pumice foot.

made around the shoe denote the difficulty the smith encounters when fixing a protection of this sort upon the pumiced hoof. The crust of the foot is always brittle, and the weight of iron employed being greater than usual requires an extra number of nails to fasten it securely. The smith consequently, in such cases, has no choice. He must drive a nail wherever he can find the horn which will sustain one.

With regard to the horn, keep that continually dressed with equal parts of animal glycerine and tar. Moisten the hoof with this mixture twice a day. No improvement may be remarked in a week; but in two or three months the crust will have become perceptibly less brittle, and the labour of the smith will be rendered far less perplexing. For the abnormal condition of the foot—that is permanent, and nothing can be done beyond employing such artifices as are calculated to relieve the affliction.

SANDCRACK.

Any cause which weakens the body of the horse, by interfering with the health of its secretions, may induce sandcrack. Treading for any length of time upon ground from which all moisture is absent, by rendering the horn hard or dry, may cause the hoof to be brittle, and give rise to sandcrack. It may arise from debility, or any cause likely to generate a faulty secretion of horn, which, lacking that toughness necessary for resisting the effects of concussion, cracks, and the disease is the result.

Sandcracks are of two sorts. Quarter crack, which chiefly happens among the lighter breed of animals. Toe crack, which occurs principally with cart-horses, and mostly with those which work between the shafts.

Quarter sandcrack is of the least importance of the two. It is oftenest seen upon the inner quarter of the hoof, where, the horn being thinnest, it is most subject to motion. Usually, it commences at the coronet, extending to the sole, and also to the sensitive laminæ.

QUARTER SANDCRACK.
Generally met with, in fast horses, upon the inner side of the fore foot.

A horse thus affected should be thrown up; should be placed in a large, loose box, and receive soft nutritious food, such as boiled oats, boiled linseed and scalded hay. A little green-meat occasionally should be allowed to regulate the bowels; greased swabs should be placed over the hoof, and under the sole. A bar shoe should be worn upon the affected foot. This treatment should be continued till the horse has recovered from its debility.

With regard to the crack itself, take a fine knife and gradually scrape off the sharp edges till the division assumes the appearance of a groove. If the crack does not reach through to the flesh no fear need be entertained concerning the lower edges of the crack, because the horn secreted by the laminæ is of a soft nature and will most readily yield. Besides, paring the outer horn often prevents the inner layer being cracked by the motion of the foot; this being done, should the division not descend the entire length of the hoof, or reach from the ground to the coronet, with a firing-iron, heated to redness, draw a line at each extremity of the fissure.

The line need not be made so deep as will occasion pain; it is only necessary that the mark should go through the hard outer crust of the foot to prevent extension of the division.

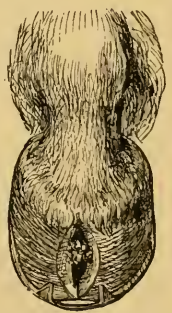
Should the separation be the whole way down the hoof, it is as well to draw, with a heated firing-iron, lines from the coronet to the crack. They should be impressed upon the horn either in a semi-

A PARTIAL QUARTER SANDCRACK DRESSED AND SHOD.

THE METHODS OF ERADICATING A SANDCRACK: EITHER THE SEMI-CIRCLE OR THE ANGULAR LINES ARE EQUALLY EFFECTIVE.

circular or V-shaped direction. Both methods divert the pressure of the horn from the crack, whereby, when action occurs, the movements of the foot are prevented from operating upon the newly-secreted horn.

Sandcrack, when it occurs at the toe, usually extends the entire length of the foot, and leaves a portion of bleeding flesh exposed. The laminæ, being opened to the stimulating effects of the air, are very apt to throw out a crop of luxuriant granulations. These, of course, are pinched between the two sides of the division. They bleed freely; often, from the pressure, they turn black, and then smell abominably. The putrid action, having once commenced, is apt to extend, and portions of the coffin bone are likely to exfoliate.



A FOOT WITH TOE SANDCRACK. Illustrating the mode of shoeing with clips, and of easing off at the toe; also exemplifying the manner of paring down the hoof, and showing the part where granulations are likely to appear.

Now, to prevent this, so soon as the horse is brought in with a sandcrack, wash the part thoroughly with the chloride of zinc lotion, one grain to the ounce of water. The bleeding having ceased, pare down the outward edges of the separation, and put on a bar shoe, eased off at the toe, and with a clip on either side of the division. If the injury has not extended the length of the hoof you must make a line at each extremity with a heated iron,

as in quarter crack, than which it is also of more consequence that the coronet should be isolated; because the external horn, being thickest at the toe, is the more likely, by its movements, to be influential upon the new and plastic horn of the coronet.

Should, however, the granulations have appeared, and the horse—with appetite lost and the head dejected, the pulse thumping and the injured foot held in the air—appear the picture of a living misery, first cleanse the wound thoroughly with the chloride of zinc lotion. Then apply a firing iron, of a black heat, to the hoof, near to the crack. The intention, in doing this, is to warm and thus to soften the horn. This effect being accomplished pare down or scoop off the edges; using the heated iron again, if necessary.

The horn being lowered, take a very sharp drawing knife and, with one movement of the wrist, excise the granulation. Set down the foot and leave it to bleed: the loss of blood will lower the inflammation and will benefit the internal parts. Give a little green-meat to cool the system and act upon the bowels. Then, with the constant use of the lotion, enough has been done for one day.

The following morning you may again apply the lotion, and continue to use it afterwards thrice daily. Any further lowering may also be accomplished to the edges of the crack, as well as the coronal portion of the horn be separated from the lower part of the hoof, by means of lines drawn as before illustrated.

If the horse must go to work, remember it should not be in the shafts, upon long journeys, or with a heavy load behind it. Before the animal quits the stable lay a piece of tow saturated with the lotion within the crack, and bind that in with a wax-end; tie a strip of cloth over all; give this bandage a coating of tar; and, when the horse returns, be sure to inspect the part. Should any grit have penetrated wash it out with the lotion, and do not begrudge a minute or two to remove that which, if allowed to remain, may cause the animal much additional anguish. Then give the suffering creature a nice deep bed, some scalded hay, and a mash made of bruised oats, into which has been

A HORSE'S FOOT DRESSED FOR TOE SANDCRACK.

Showing the way in which it should be bound up, when work is imperative.

thrown a handful of linseed and cut up carrots; moisten these last constituents with the water drawn from the scalded hay, and if the horse should not appear hungry throw among the hay half a handful of common salt.

The poor man may have some excuse for working an animal with sandcrack; such a person cannot afford to keep the horse in idleness for the months which the cure will occupy. But, when money is no object, it is always more humane and better for the horse with sandcrack to rest until the hoof horn has regained its sound condition.

FALSE QUARTER.

False quarter is the partial absence of the outer and harder portion of the hoof. The consequence is that the sensitive laminæ, in the seat of the false quarter, are only protected by their own soft or spongy horn. This is frequently insufficient to save the foot from severe accident: it is apt to crack, being strained by the motion of the hoof. The fleshy parts are then exposed; bleeding ensues, and fungoid granulations sometime spring up; these are often pinched by the two sides of the divided horn, between which they protrude. When such occurs, the treatment should be the same as that recommended for sandcrack.

FALSE QUARTER, OR A DEFICIENCY OF THE OUTER WALL.

THE ONLY POSSIBLE RELIEF FOR FALSE QUARTER.

No art can cure a false quarter; a portion of the coronary substance has been lost, and no medicine can restore it. All that can be done is to mitigate the suffering; a bar shoe with a clip at the toe may be used, the bearing being taken off at the seat of false quarter. The portion of crust near to the weakened part should be bevelled off, so to join the soft horn with an insensible edge. Some persons recommend a mixture of pitch, tar, and rosin to be

poured over the exposed quarter. This application usually acts as a protective to the quarter, but unless covered with tight bandage, such as webbing, it in a short time is likely to peel off. A piece of gutta-percha of proportionate thickness, fastened over the place, will perhaps preserve the affected parts better than any other means, as it keeps on longer than any other kind of bracing, and causes the animal to work with comparative ease.

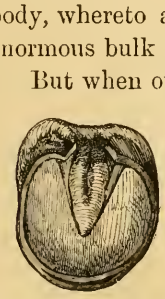
SEEDY TOE.

Decay of the tissues is the result of disease or old age; and, soon after the period of advanced adultism, signs of it are noticed in the grey head and dimness of sight, and in the brittle and abnormal condition of men's nails. So with the horse, decay, prematurely caused by hard work, induces that disintegration of the hoof horn which is known as seedy toe.

SECTION OF A HORSE'S FOOT AFFECTED WITH SEEDY TOE.

The wall of the foot is composed of two layers: the outer one, the hardest, the darkest and the thinnest is secreted by the coronet. The inner layer, the softest, thickest, and most light in colour, is derived from the sensitive laminæ. These different kinds of horn, in a healthy state, unite one with the other, so that the two apparently form one substance. The junction makes a thick, elastic and strong body, whereto an iron shoe can be safely nailed and whereon the enormous bulk of the horse's frame may with safety rest.

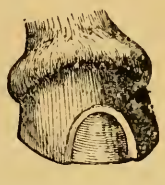
But when overwork affects the natural functions of the body, the two kinds of horn do not unite; their division invariably begins at the toe, as it always commences in the nail of the human being at the outer margin. If the seedy toe be tapped or gently struck it emits a hollow sound, and if the shoe be removed there will be found a vacant space between the two layers of horn; into this space a nail, a piece of broom, or a straw is commonly pushed to ascertain the depth of the lesion.



THE APPEARANCE PRESENTED BY SEEDY TOE WHEN THE SHOE IS REMOVED AND THE GROUND SURFACE OF THE WALL IS INSPECTED.

The whole of the detached horn must be cut away; and the

horse should be thrown out of work and turned to grass; and two feeds of corn, with chaff, should be allowed daily during the time the animal is at pasture. The smith should inspect the foot, and cut away so much of the outer wall as may still be disunited. It commonly takes three or more months for the hoof to grow down or to become perfect; and rest, with liberal feeding during this time, is sufficient to renovate an exhausted frame. A new and sound covering for the hoof of the invigorated horse is secreted by the expiration of the period named.

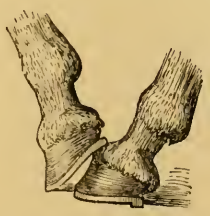


THE APPEARANCE OF THE HOOF AFTER THE SEEDY TOE HAS BEEN REMOVED WITH THE KNIFE.

The ordinary method of cure is to cut away the hoof; then, having nailed a shoe on, to send the disfigured horse to resume labour. Under this form of treatment the seedy division, once confined to the toe, has extended to the quarters; the structure of the hoof being destroyed, the horn was unfitted for its purposes, the weight of the body forced the sensitive laminæ from the coronary secretion, and the foot, after long treatment, became a deformity. The cure for a horse with seedy toe, if the best result be the object of treatment, consists in adopting the measures above indicated, with rest, until health in the part has been established and the hoof has regained its natural shape.

TREAD AND OVER-REACH.

Tread is a very rare occurrence with light horses, who are usually quick movers; but sometimes at the end of a long journey,



TREAD IN LIGHT HORSES
The hind foot, from fatigue not being removed soon enough, is wounded by the heel of the fore shoe being placed upon its coronet.

TREAD UPON THE HIND FOOT OF CART-HORSES.
The animal becomes unsteady from exhaustion; the feet cross, and a wound results.

i.e. when leg-weary, this accident does occur, the fore leg, from fatigue, being unable to escape the tread of the hind foot.

However, amongst cart-horses, such a form of injury is more frequent. These poor animals have to drag heavy loads, at a slow pace, it is true, but to long distances; they are, generally, badly fed. Farmer's horses, especially, during the spring and summer months, being supported upon green meat, the watery nourishment impoverishes the blood, and the exhausting labour undermines the system. Often the load has to be taken down-hill towards the end of a tedious journey; the whole burthen then rests upon the shafts, and the wretched horse which is between them rocks under the weight like to a drunken man. The legs cross, till at last the caulkin belonging to the shoe of one hind foot tears away a large lump of the opposite coronet. A piece of flesh is commonly left upon the ground; the hæmorrhage is extreme, and the waggon is brought to a stand.

The worst case of the kind the writer ever saw occurred after the preceding fashion; and the carter (who, by the bye, was proprietor of the sufferer) left the poor horse in a forge, giving orders that the smith was to do what he could, or to have it killed, as he pleased. The smith consulted the writer, and he treated the wound after the method recommended for open joint, or by bathing it thrice daily with the solution of chloride of zinc, one grain to the ounce of water. In a week, a large slough took place; this opened the coffin-joint, and left a portion of the extensor pedis tendon hanging from the orifice. The treatment was continued; the lameness, which at first was excessive, gradually grew less; the piece of tendon sloughed out, and the wound began to heal. It had closed when the animal was fetched away by the owner; but the writer was unable afterwards to learn whether false quarter ensued upon the injury. This, from the extent of the wound, the writer would conjecture to have been probable; indeed, false quarter and quittor are the general consequences of severe tread.

OVER-REACH, OCCURRING DURING THE EXHAUSTION OF LIGHT HORSES.

Over-reach is confined to fast horses; it happens to those which are good steppers. When tired, the feet are apt to be moved irregularly; thus, one foot is often in its place before the other has been lifted. The result is that the inner part of the hind foot strikes the outer side of the fore coronet. A wound, and fre-

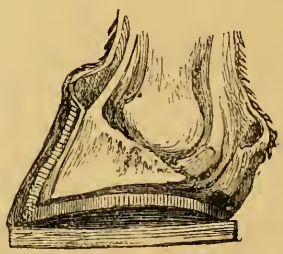
quently a severe one, is the consequence. False quarter or quittor is likely to ensue; the treatment must be the same as was before described. No poultices are required; these only add to the weight of the injured limb, and augment the distress of the animal. No harsh measures should be allowed; the horse has enough to bear. a slough has to take place. This is a severe tax upon the strength; All the good food and prepared water the animal can consume will not now be thrown away; the treatment is materially shortened by the nourishment being sustaining of its kind and liberal in quantity; but the injury should be treated only with the knife and the chloride of zinc lotion described in the course of this article.

CORNS.

Corns are of four kinds—the old, the new, the sappy, and the suppurating; all are caused by bruises to the sensitive sole. The shoe is the passive agent in their production, when they occur in large fleshy feet; the thick, unyielding, horny sole is the passive agent, when they are present in contracted feet. The coffin-bone, in both cases, is the active agent; the wings, or posterior portions of this bone project backward nearly as far as the bars, or immedi-

DIAGRAM

Showing the position of the hindermost part of the coffin-bone, when in a passive state, also portraying the shoe in the fleshy or flat foot.



DIAGRAM

Illustrating the relative positions of the wings of the coffin-bone, and the thick, concave, horny sole of the contracted foot when not in motion.

ately over the seat of the corn. When the horse is in motion, the coffin-bone can never remain still; it rises, or rather, the wings are drawn upwards by the flexor tendon every time the foot is lifted from the earth; and sinks, because of the weight cast upon it, every time the foot touches the ground. The wings of the bone, thus in constant action, when the horny sole is weak, often descend upon

the fleshy sole and bruise that substance upon the iron shoe; what is called a corn is the consequence. In contracted feet, where the sole is high, thick, and resistant, the horny sole does not descend, even when the immense weight of the horse's body rests upon it. It remains firm and fixed during every action of the animal; not so, however, the coffin-bone, which is in continuous motion. The result of course is, the imposed burden forces the wings of the coffin-bone downward. The horny sole will not yield, and the fleshy sole is, therefore, bruised between the wings of the coffin-bone, and the horn bottom of the hoof; a corn is thereby established.

Corns in a horse do not answer to those excrescences found upon the feet of man; being bruises, they consist of effusion in every instance. The effusion may either be of blood or of serum; blood constitutes the old and the new corn; serum gives rise to the sappy corn. The suppurative corn is an after consequence of either of those just named. When the effusion has been so large as to defy absorption, a new action is started up. Pus is secreted, and a suppurative corn is then created.

An old corn is the least serious, especially when it is easily cut away. It appears as a black mark upon the surface of the horny sole, and is little thought of when it can be speedily removed by the knife; because this shows the horse had a corn, but at present is free from such an annoyance. When, however, a superficial corn cannot be scooped out with the drawing knife, but becomes brighter and brighter as more and more horn is cut away, till it assumes the scarlet aspect of a new corn, the matter is rather grave, because it denotes the horse to have had, and not to have been free from, corns during the growth of the present sole.

THE SITUATION AND ASPECT OF AN OLD CORN UPON A LARGE FLAT FOOT.

The new corn, as has been just intimated, consists of a portion of blood effused into the pores of the horn, and is of a bright scarlet colour. The size is of some consequence, as it best intimates the extent of the injury; if the stain be small and deep-seated it is of least moment. (*See engraving, p.* 373.)

The sappy corn is the consequence of a more gentle bruise, when serum and lymph only are effused; the horn being thereby

merely rendered moist, not discoloured. This species of corn is not very common, and by proper shoeing is readily removed.

The suppurating corn is the worst of all; it engenders heat in the foot, and causes excessive lameness; it creates all that anguish, a shadowy taste of which the human being endures, when pus is confined beneath the substance of the finger-nail. The foot cannot be put to the ground; the arteries of the pastern throb forcibly; the countenance is dejected, and every symptom of acute suffering is exhibited.

THE DEEPLY-SEATED AND SMALL SCARLET SPOT WHICH DECLARES THE PRESENCE OF A NEW CORN.

Corns, which in man are found on the lower members, in the horse are generally witnessed only upon the fore feet; but, in whichever foot they appear, they must be the production of an instant; though, probably, the suppurative may be an exception; yet, from these always being suddenly observed, even this species are said to be of instantaneous origin. A horse, when progressing, makes a false step; a sanguineous or sappy corn is by that faulty action established. The same horse may trot home perfectly sound, and be put into the stable for the night a healthy animal; but on the following morning it may be discovered standing on three legs. Pus may, in the interval, have been secreted, and the corn may have assumed the suppurative character.

The manner to examine for corn is, in the first place, to mark the age of the horse; then observe if, in the trot, either leg is favoured. The animal being young, splint is the common cause of uneven action; if old, corns are more generally expected; the horse is brought to a stand, and the smith sent for. The man raises the fore foot, and taking a portion of crust and sole between the teeth of the pincers, gradually increases the pressure; he thus proceeds till he has by successive trials squeezed the sole all round. If the leg, while undergoing the operation, be withdrawn near either of the nails, it indicates

THE SOLE OF THE HORSE'S FOOT BEING TESTED FOR CORNS.

that injury has been inflicted in a different direction to that of corn; if one does exist, the fact will be manifested immediately on the application of pressure near the heel. Should no flinching be witnessed, the examination is not esteemed satisfactory until the smith has, with a small drawing knife, denominated a searcher, cut away a portion of the sole at the seat of corn.

The sensibility will be extreme should suppurating corn be present; in that case, the sole must be gradually removed, until the pus is released. That being done, the shoe should be taken off, and the foot put into a bran poultice. By this means, the horn will be rendered more soft, and the wound cleansed. The smith, on the following day, must again cut the foot, every portion of detached horn being very carefully excised.

The horn is itself a secretion, and, in a healthy state, is intimately united with the source of its origin. When, however, pus is effused, this always lies between the secreting membrane and the horn, which has been already secreted. The horn, so displaced by the presence of a foreign substance, is called under-run or detached; and all horn, so under-run or detached, must be removed. When this operation is properly performed all signs of lameness will have generally disappeared. It is usual, however, to tack the old shoe on again; and having dressed the injury with chloride of zinc and water (one grain to the ounce), there remains only to examine the foot from time to time till new horn covers the surface; merely taking precaution for the present to shield the wound with a little tow, fastened in its place by a couple of cross splints.

When sanguineous or sappy corns are found, the method is, firstly to thin the sole, so as to render it pliable, especially over the seat of corn. Should a sappy corn have rendered the horn moist for any space, or should the discolorisation caused by sanguineous corn be of any size, it is as well always to open the centre of the part indicated: no matter should the cut release only a small quantity of serum or a little blood. Take away a small portion of horn; pare the sole till it yield to the pressure of the thumb. When such a proceeding is necessary the bars may be entirely removed, and the wounds should be covered with some tar, spread upon a pledget of fine tow. As soon as the orifice is protected by new horn, the horse may be shod with a leathern sole and returned to its proprietor.

Such a course would occupy little time—a week at most. Yet, the great majority of horse proprietors appear to have "flinty hearts," as nearly all of them begrudge the necessary day of rest to the maimed animal which has been injured in their employment. The cry, where the horse is concerned, is "Toil, toil!" The veterinary surgeon is often asked, "If *absolute* rest is imperative?" He is frequently solicited to patch up the poor animal, so that it may do a *little* work. As day after day passes onward, the tone becomes more and more authoritative. The horse is at last too often demanded from the hospital, and taken to resume ordinary labour before the injury is effaced. Should no evil effect ensue on such a culpable want of caution, the proprietor is apt to chuckle over his daring with another's sufferings, and to blame the science which would not incur risk even to propitiate an employer.

A horse whether he be lame or not with corn, the existence of it, with or without lameness, constitutes unsoundness, and no veterinary surgeon would think of pronouncing a horse sound with the marks of this disease upon his foot. When the sole is high, the shoe should always be accompanied by a leathern sole. Liquid stopping should be poured into the open space at the back of the foot; and, at every time of shoeing, the smith should pare the sole quite thin, even until drops of blood bedew the surface of the horn. When corns appear in flat or fleshy feet, as shoeing time comes round, only have the very ragged portions of the frog taken away. Have the web of the shoe narrowed, so as to remove all chance of pressure against the iron. Lower the heels of the shoe, or try a bar shoe, with the bearing taken off over the seat of corn. Should that not answer, next put on a three-quarter shoe: many horses, however, will go sound in tips, that cannot endure any other sort of protection to the foot. By resort to one or the other of these measures, that injury, which nevertheless may lead to terrible lameness, or even lay the foundation for a quittor, may be greatly mitigated.

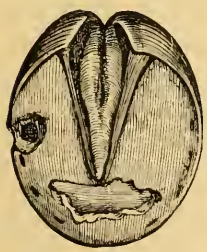
THE POSTERIOR OF A HORSE'S FOOT SHOD WITH LEATHER.

The central angular mark indicates the place into which the liquid stopping should be poured.

BRUISE OF THE SOLE is an accident leading to effusion of blood,

—so far it resembles corn; but it is dissimilar, in not occurring on a part subject to the same degree of motion, and therefore is not so severe in the consequences to which it leads. It is caused by treading on a stone, and is removed by paring off the horn, which has been discoloured, or lies immediately beneath the injury. It seldom leads to great lameness, or gives rise to serious results. It is treated after the manner directed for corn; but it is always advisable to shoe once, with leather, the horse which has suffered from bruise of the sole. The difference between corn and bruise of the sole is simply this: the first is an injury produced by a cause which is seldom within the control of the proprietor, and which, if neglected, is likely to lead to the most disastrous maladies; the last is purely an accident, to which any horse at any time is liable, and with ordinary care is not likely to give rise to any serious consequences.

Prick of the foot is an injury incurred while the horse is being shod. There are two sorts of this accident: one, when the nail penetrates the fleshy substance of the sensitive laminæ, and draws blood; the other is, when a nail is driven too fine, or among the soft horn which lines the interior of the hoof, and consequently lies near to the sensitive laminæ. The first is of the more immediate importance, but the last may be equally serious in its effect. As the horse works, the strain upon the shoe bends the nail fixed into soft horn. It thus is made to press upon the sensitive laminæ, and may provoke suppuration.



PRICK OF THE FOOT AND BRUISE OF THE SOLE.

The smaller opening represents prick of the foot: the larger space indicates bruise of the sole. The extent to which the horn may be removed, in the generality of cases, is also indicated.

To detect whether the smith is in fault the foot should be first squeezed between the pincers, as for common corn; then have the nails withdrawn, one by one, and mark each as it is removed. If one appears moist or wet, have the hole of that nail freely opened. Let the shoe be replaced, leaving that nail out. Put a little tow, covered with tar, over the wound and shoe with leather. If, however, lameness should still be present, the shoe must again be taken off, and the injury treated as recommended for suppurating corn.

Blame the smith who pricks a horse and conceals the fact—

punish the fellow to the extent of your power. But the man who pricks a foot and acquaints you with the circumstance, deserves civility. The last enables you to take proper measures, such as paring out, etc., and thereby you avoid all unpleasantness. The first braves chances with your living property, and deserves to suffer if the hazard go against him.

QUITTOR.

This is a severe and painful disease. Many a horse is, at the present moment, working with a suppurating wound above the hoof, within the interior of which run numerous sinuses.

Quittor is a terrible disorder. To comprehend the full of the pain which accompanies it, the reader must comprehend the structures through which it has to penetrate and the substances it has to absorb. All parts are slowly acted upon, in proportion as they are lowly organised. Cartilage is the structure, into the composition of which no blood-vessels enter. Next to cartilage is bone which, though supplied with vessels, is, on account of its mixture with inorganic matter, exposed only to slow decay, and the exfoliation of which is effected at a vast expense to the vital energy. These substances mainly compose the foot of the horse. In addition, there is ligament, almost as slowly acted upon as bone ; disease in which substance is accompanied by the greatest anguish. Horn is an external protection; but that material, though an animal secretion, is strictly inorganic : when cut, it does not occasion pain—neither does it bleed. If a portion of horn should press upon the flesh, it must be removed by the knife ; for, unlike to the more highly-gifted structures, there is no chance of its being absorbed.

The hoof, therefore, being the external covering to the foot of the horse, and not being liable to the same action as organic secretions, serves to confine pus or matter, when generated within its substance. Pus could work through the largest organised body, but it cannot escape through the thinnest layer of horn. Now, most of the other substances which enter into the composition of the horse's foot are such as slowly decay ; but those parts which slowly decay, being without sensation during health, occasion the most extreme agony when diseased.

The cause of quittor always is confined pus or matter, which, in its effort to escape, absorbs, and forms sinuses in various directions within the sensitive substances of the hoof. In the hind feet of cart-horses quittor generally commences at the coronet; the coronet is wounded or bruised by the large caulkins or pieces of iron turned up at the back of the hind shoes, which are universally worn by animals of heavy draught. Any one who has punctured or cut the coronet of a dead horse knows this structure is as difficult to penetrate and as hard to divide as cartilage itself; the consequence of an injury to such a part is, the bruise produces death of some deep-seated portion of the compact coronet. Nature, after her own fashion, proceeds to cast off that which is without vitality, or, in other words, she divides the dead from the living tissues by a line of suppuration; but the matter thus located cannot readily escape through the harsh material of the horse's coronet. It is confined and becomes corrupt, while the constant motion of the foot and the higher organisation of the secreting membrane of the horn inclines the pus to take a downward direction. However, it is more difficult for pus to pierce the horny sole than to penetrate the coronet. So the effort is renewed above; numerous pipes or sinuses are thus formed upon the sensitive laminæ; the fleshy sole is often underrun, and this mischief goes on until the coronet, which becomes of enormous size, at last yields to the increasing evil.

Another cause is pricking the sensitive part of the foot with a

DIAGRAM

Which supposed the outward covering of the coronet and the horny wall of the hoof removed, to expose the ravages of quittor, when commencing in the coronet of a heavy horse.

DIAGRAM.

The covering of the coronet and horny crust supposed to be absent, and exposing the manner in which any suppurating injury to the sole of the foot ultimately causes a wound above the hoof.

nail during shoeing; the wound generates pus, the pus cannot penetrate the horn, and the motion of the coffin-bone causes it to absorb upward, until after some time it breaks forth at the coronet.

Another cause is corn; the horse's corn is nothing more than a bruise; the bruise, in some instances, is severe, and takes on the suppurative action. The pus, as before, is confined, and by the motion of the coffin-bone, it is propelled upward till it breaks forth at the coronet, which, as before, enlarges to deformity; in short, any injury done to the sole of the foot or to the coronet above it, may produce quittor.

The leading sign of quittor, before it breaks, is a large swelling at the coronet, attended with heat and excessive lameness. In cart-horses, it is usually present in the hind feet; but in the lighter species it more frequently occurs in the fore feet. It generally appears upon the inner side of the hoof, though, of

A QUITTOR, AS IT DENOTES ITS EXISTENCE BEFORE THE PUS ABSORBS ITS WAY THROUGH THE CORONET.

A QUITTOR, AFTER THE PUS HAS FOUND AN EXIT AT THE CORONET.

course, it has often been witnessed upon the outer coronet. Quittor becomes a huge swelling before it breaks. The amount of tumefaction symbolises the amount of anguish; it is, indeed, a most painful disorder.

The animal, after the pus has found vent, becomes easier; fever departs; the appetite returns, and the enlargement greatly diminishes.

In the cure of a quittor, all depends upon the time during which the disease has been allowed to exist; if brought under notice at first, and from an examination, a belief is confirmed that the sinuses are wholly superficial. No treatment is comparable to the plan of slitting them up, the method of doing which will be described in a subsequent chapter: this at once affords relief. The horse, which was limping lame, upon getting up, puts the foot fearlessly to the ground, and trots sound.

If we have reason to believe the matter has burrowed inwardly, and that one or more sinuses have penetrated the cartilages and

threaten the deeper-seated parts, still, we should settle all those pipes which are superficial with the knife. This gives a better view of the structures supposed to be diseased; then if, among the matter thrown out by the healing wounds, there is seen a speck or two of fluid, which, being gelatinous and transparent, looks dark among the opaque, creamy pus, be sure there remains further work to be accomplished.

DIAGRAM.

An attempt to depict the small size of the transparent fluid, indicating the existence of a sinus, when it appears at the wound whence issues the stream of thick and creamy pus.

Cut a small twig from the stable-broom; this is pliable, and where a sinus is concerned makes the best possible probe. With a knife render it perfectly clean, as well as round or blunt at one end; then, while an assistant holds up the foot, insert it in the centre of the dark fluid. If it should not at first detect an opening, you must not give up the trial; the probe must be moved about, and even a smaller one procured. A sinus does exist; of that you have positive proof. The pipe being found, mix some powdered corrosive sublimate with three times its bulk of flour; then, wet the probe; dip the probe into the powder, and afterwards insert it into the sinus. Do this several times till you feel certain that every portion of the pipe is brought in contact with the caustic.

The horse, subsequently, will become very dull; the foot will grow very painful: thus it will continue for two days. About the third day a white, curd-like matter is discharged from the orifice; the lameness disappears, and the spirits are regained.

The better plan, and infinitely the cheaper for the person who is regardful of his pocket, is to have every animal inspected by a qualified veterinary surgeon, so soon as it displays acute lameness. Were such the practice—corn, prick of the foot, or wound of the coronet, need not run on to quittor. Grooms, who possess no scientific knowledge, are consulted, and their advice is taken upon subjects which the master is better able to form an opinion on than they are. And when he professes his ignorance about horse matters, surely greater ignorance cannot assist in the cure of this or any other disease. Time which allows bad to become worse is injurious, not only to the well-being of the horse, but also to the pocket of the owner.

CANKER.

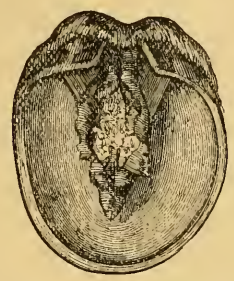
Thrush is a disease that causes a certain liquid to be secreted, which has the property of decomposing the horn. Canker is a disease which not only is attended with a liquid having a like property, but the last-named affection also causes fungoid horn to be secreted. Canker, therefore, appears to be an aggravation of thrush; and anybody, who has been much among the animals of the poorer classes, may have observed these diseases lapse into each other: thrush will, through neglect, become canker.

Thrush appears to be the commencement of the disorganisation of the foot. Canker is the total perversion of the secreting powers belonging to the same organ. In thrush, a foul humour, having a corruptive property, is poured forth. In canker, something is superadded to this. The horn itself is sent forth in large quantity, as a soft, unhealthy material, totally divested of the elasticity and devoid of all healthy resistance.

Any animal, being exposed to the exciting cause, may exhibit thrush; but, before canker seems capable of being produced, poor living must have undermined the constitution. Old horses (pensioners as they are humanely termed), when turned out to grass, often have canker—which otherwise should be confined to the animals of poverty, on which bad lodging, no grooming, stinted food and hard work, produce sad effects. The stable, in which a case of canker occurs, is lamentably disgraced.

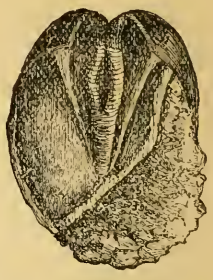
Canker, like thrush, is not generally attended with much lameness. It often astonishes us that, with a foot in such a condition, the animal can progress so soundly. It invariably commences at the seat of thrush, or in the cleft of the frog. A liquid, more abominable than that of thrush and rather more abundant, issues from that part. Likewise, it frequently exudes from the commissures, which unite the horny sole to the frog. The horn, also, becomes not only disorganised, but more ragged than in thrush. It bulges out at first, and ultimately flakes off, exposing a substance not much more resistant than orange peel. The substance is horn in a fungoid state. Its fibres run from the centre to the circumference, and between the space of each fibre is lodged a clear liquid, which becomes tainted and dark-coloured by mingling with the horn that it dissolves and corrupts.

The fungus is secreted in quantity, and always is most abundant when located about the edge of the sole. Here the papillæ are largest, and here the granulations attain their greatest magnitude. The unresistant horn of canker becomes somewhat hard upon the surface of the sole, and large flakes peel off. Cut into, it displays no sensation; and this is fortunate, inasmuch as it considerably



THE PRIMARY ESTABLISHMENT OF CONFIRMED CANKER.

The horn turned back, so as to display the altered state of the frog, which indicates a severe attack of the disease.



THE SECOND STAGE OF CANKER.

Showing the great abundance of fungoid horn secreted around the margin of the foot. No notice is purposely taken of the frog in this illustration.

reduces the difficulties surrounding the treatment of a badly cankered foot.

Concerning treatment, when the disease is confined to one hind foot, or even affects both posterior feet, the case may be undertaken with some degree of confidence. When it has involved one or more of the fore feet it is always difficult to eradicate; and, in the majority of cases (being guided by the age of the animal), a cure had better not be attempted.

When a horse is cankered all round, the disease is apt to seem capricious. It may be cured in three feet; but it will linger in the fourth, resisting art's resources. Suddenly, measures before tried in vain seem to be endowed with marvellous efficacy. The diseased member, which hitherto no treatment could touch, now heals as by its own accord. However, before we can express the full of our satisfaction, canker once more breaks out again in one of the feet which have been cured; thus, the affection dodges about, till patience is exhausted.

Canker has, hitherto, been reckoned an intractable disorder. It is mostly seen in heavy horses with weak, flat feet. These creatures

proverbially receive but little grooming. They are esteemed only for their labour, and honoured with small attention, which does not decidedly fit them for their work. Their stables are seldom to be cited as examples of what a horse's home should be. Their beds are never too clean; and a number of foul disorders, as thrush, grease, etc., are located amongst them. Their food is generally measured by the scale of profit and loss; for few cart-horses, in the generality of establishments, can boast of any extraordinary care being lavished on their comfort.

For the treatment of canker, the first thing is to attend to the stable. See that the building is lofty and well drained; that the ventilation is perfect, and the bedding unexceptionable. Then inspect the water, the oats, and the hay. Allow the horse a liberal support, and with each feed of oats mingle a handful of old beans. These things being arranged, order the animal into the forge. Cut away every portion of detached horn. When that is done, pare off carefully so much of the soft diseased horn as the knife can readily separate. Then dust a dressing of the following strength on the diseased parts:—

Chloride of zinc	Half-an-ounce.
Common flour	Four ounces.

Mix, and apply dry on the foot.

To the sound parts use—

Chloride of zinc	Four grains.
Flour	One ounce.

Cover over the sound parts before you begin to dress the fungoid granulations.

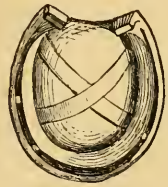
Afterwards tack on the shoe. Pad well, so as to obtain all the pressure possible, and fasten the padding on the foot, by means of cross pieces of iron, driven firmly under the shoe. Let the horse be carefully groomed, and receive four hours' exercise daily.

On the second day remove the padding. Cut off so much of the granulations as appear to be in a sloughing condition. Repeat the dressing, and continue examining and re-dressing the foot every second day. When some places appear to be in a state of confirmed health, an application of the following strength should be employed to such parts; but where the granulations continue to sprout, or

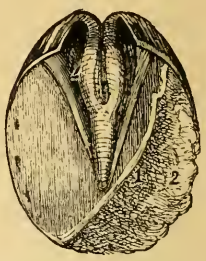
the horn appears to be of a doubtful character, the caustic mixtures of the original strength must be used:—

Chloride of zinc	Two grains.
Flour	One ounce.

After some time, the dressings may be lengthened to every third



THE BOTTOM OF A HORSE'S FOOT WHICH HAS BEEN DRESSED FOR CANKER, SHOWING HOW THE CROSS PIECES ARE PLACED AND FIXED.



AN IMPROVEMENT IN A CANKERED FOOT.

1. That portion of a cankered foot which is advancing towards a healthy condition.
2. Canker in a mitigated form, but still present.

day, but not for a longer period; for, if the foul and irritating discharge be confined too long, injury to the foot may ensue.

In the plan of treatment here proposed, the chief reliance is placed on the action of chloride of zinc. It is the peculiar property of that agent to suppress fungoid granulations. The author has some experience in the use of this salt. Whenever he gave it to a groom to apply, and subsequently found the wound clogged with proud flesh, he accused the man of having neglected to employ the lotion. The evidence on which the charge was made never, in a single instance, proved erroneous. To suppress fungoid granulation is to cure canker.

The application here advised is, moreover, cleanly. It is the most powerful disinfectant. It does not discolour, like the messes now in general use. It is more gentle in its action than undiluted sulphuric acid, etc., etc. It will cause none of those terrible fits of agony, during which all applications have to be removed, while the foot has to be bathed and poulticed. Notwithstanding, all authors agree the absence of water and the presence of pressure are indispensable to the cure of canker, the frequent dressings will not endanger the life, nor leave the foot in that condition which entails a deformed hoof upon the horse for the remainder of its existence.

THRUSH.

Thrush is a foul discharge issuing from the cleft of the frog, and attended with disorganisation of the horn. It is derived from two causes—either internal disease or bad stable management. When internal disease gives rise to thrush, it is present in the fore foot. The quarters of the hoof are strong and high; the sole is thick and concave; the frog small and ragged. When bad stable management provokes the disorder it shows itself in the hind foot, which may be of any shape; but the frog is generally large, while the discharge is more copious than in the former instance.

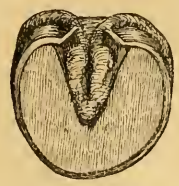
THRUSH IN THE FORE FOOT WITH A THICK CRUST, A CONCAVE SOLE, AND A SMALL FROG.

It is sad to think that the creature which lives but to toil, and whose existence is a type of such slavery that its greatest freedom is to labour, should be begrudged the bed whereon it reposes, or be doomed to stand in filth which will generate disease. The horse's foot is not very susceptible to external influences. It is encased in a hard and inorganic, yet elastic substance. Thus protected, it appears like praising the ingenuity of man when we say such a body is not proof against his neglect. The hoof is made to travel through mud and through water; it is created to canter over sand and over stones. It is capable of all its purposes; but it only seems not fitted to be soaking days and nights in the filth of a human lazar-house. The drainage of the stable is too often clogged, the ventilation bad, the bedding rotten, and more than half composed of excrement. All that passes through the body, from the inclination of the flooring, tends towards the hind feet. Over this muck the animal breathes. In it the creature stands, and on it the victim reposes.

THRUSH IN THE HIND FOOT

No wonder the horn rots, when implanted in a mass of fermenting filth. The fleshy, secreting parts, which it is the office of the hoof to protect, ultimately become affected. They take on a peculiar form of irritation. From the cleft of the frog a discharge

issues; it becomes coloured and offensive through being mixed with the decaying horn; the smell is most abhorrent—frequently it taints the interior of the place, and to the educated nose thus makes known its presence.



AN ILLUSTRATION OF THE ABUNDANCE OF WHITE POWDER INVESTING DECAYED HORN, AND OFTEN FOUND AFTER THE RAGGED PORTIONS OF A THRUSHY FROG HAVE BEEN REMOVED.

The first thing is to clear the stable, then to cleanse it thoroughly. Bed down the stalls with new straw, and attend to the animals themselves. Wash the feet well with water, in every pint of which is dissolved two scruples of chloride of zinc. The fœtor will thus be destroyed, and the animal be made approachable. Place some of the fluid, to be used as required, near to the smith, while the man cuts away the diseased frog. All the ragged parts are to be excised. The knife is to be employed until all the white, powdery substance is effectually removed.

The knife must then be used fearlessly. Every particle of the colourless investment of the frog must be excised. This is absolutely necessary towards the cure. It must be accomplished, although the flesh be exposed, or a large bulging frog be reduced to the dimensions indicated in the annexed engraving.

Then the shoe is to be nailed on, and the horse to be returned to a clean stall.

The cause being removed, the effect will soon cease. No ointments are required. A little of the chloride of zinc lotion, three grains to the ounce of water, may be left in the stable, and the keeper should receive directions to bathe the frog with this once a day, or oftener if required. A piece of stick, having a little tow wrapped round one end, should also be given to the man, so that he may force the fluid between the cleft of the frog. No greasy dressing need to be employed. The ordinary shoe is to be used. The diseased part is to be left perfectly uncovered; so that it may be the more exposed to the sweetening effects of pure air, while the earliest indication of any further necessity for the knife may be readily perceived. When the stench has disappeared, a little of the liquor of lead, of its original strength, will perfect the cure;

and all requisite to prevent a return of the disorder is a reasonable attention to the cleanliness of the stable.

At this place, however, the reader may well reflect that, if the filth of the stable is capable of rotting the resistant and insensitive horn of the horse's foot, how much more is it likely to affect some of those delicate structures of which the bulky frame of the animal is composed? The air in which a man might object to live is altogether unfit for a horse to inhale. It is true animals have breathed such an atmosphere and continued to exist. So also is it true that men have been scavengers, and have followed that calling on account of what they esteemed its extraordinary healthfulness. Neither case establishes aught. The animal is by nature formed for large draughts of pure air. All other sustenance is as nothing if the primary necessity of life be withheld. Tainted atmosphere is the source of more than half the evils horse-flesh is exposed to. Glanders, farcy, inflammation of the air passages, indigestion, bowel complaints,—in fact all diseases, save those of a local character, may spring from such a parent. Let every horse-keeper therefore, if from no higher motive, at all events to conserve his property and to promote his pecuniary interest, be especially careful about the purity of his stables.

When thrush occurs in the fore-feet it is generally significant of navicular disease, and is most frequent in horses which step short or go groggily. The hoof feels hot and hard; a slight moisture bedews the central parting of the very much diminished frog. No odour may be smelt when the foot is taken up; but, by inserting a piece of tow into the cleft of the frog, the presence of the characteristic symptom will be made unpleasantly apparent.

In this case it is best to remove the ragged thrush and unsound horn, doing so, if required, even to the exposure of the sensitive frog. Afterwards, simply wash the part with a little of the chloride of zinc and water, previously recommended. Repeat the cleansing every morning; the intention being, not to remove the thrush, as the horse mostly goes lame the instant that is stopped, but merely to correct the pungency of the morbid discharge, and thus prevent it, in some measure, from decaying the horn.

Clay, cow-dung, and other favourite filths, employed for stopping the horse's feet, if long continued, will produce thrush.

Too much cannot be said against this evil practice, as it is provocative not only of this but of other similar diseases of the foot. If moisture to the sole be necessary, it can be applied by other means than by the imposition of fermenting filth in close approximation to living structures. A mixture of soft soap and carbolic acid is a good dressing for the foot; it possesses curative properties which give health, whereas filth can alone induce disease.

Thrush does not generally provoke lameness. In its more aggravated forms, however, it interferes with the pace; and the horse, having only incipient thrush, is liable to drop suddenly, if the foot be accidentally placed upon a rolling stone. Now, knowing our roads are made of stones, and that the bottom of the horse's foot is, in the ordinary manner of shoeing, entirely unprotected, it can be understood how easily blows may be inflicted, and congestion supervene, causing lameness. When such occurs, well foment the foot, treat as above described, and enjoin rest until the animal is sound.

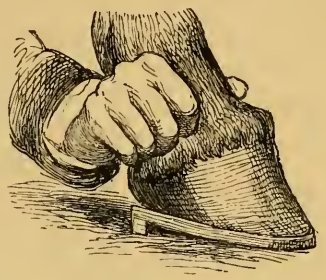
OSSIFIED CARTILAGES.

This signifies a conversion into osseous structure of the cartilages, naturally developed upon the wings of the coffin bone or the bone of the foot. Here is a drawing of the largest specimen of this transformation which the writer ever witnessed.

OSSIFIED CARTILAGES.
The lateral cartilages of the horse's foot have undergone change and become bone; being now continuous with the os pedis.

In heavy horses, working upon London stones, so certain are the cartilages to become ossified, that several large firms pay no attention to this defect. They prefer an animal with a confirmed disease to a sound horse, which will be certain to be ill during the change, and the extent of whose subsequent alteration no one can predicate. So far these purchasers act wisely; but, in horses designed for fast work, ossified cartilages are a serious defect. It frequently occasions lameness, and always interferes with the pleasantness of the rider's seat. When accompanied by ringbone, ossified cartilages give rise to the most acute and irremediable lameness.

Ossified cartilages are incurable. No drugs can force nature to restore the original structure which has been destroyed. Once let a cartilage become ossified, and it remains in that condition for the creature's life. There is little difficulty in ascertaining when this change has taken place. The hand grasps the foot just above the coronet; the fingers are on one side, and the thumb upon the other. The cartilages lie at this place, immediately under the skin. Cartilage is soft, pliable, and semi-elastic. It yields very readily to pressure. However, when the thumb and fingers forcibly press the part, if, instead of feeling the substance under them yield, the hand is sensible only to something as hard as stone, or any way approaching to such a character, that is proof positive the cartilages are ossified, or are approaching change. If the horse has recently gone lame, and the seat of cartilages feels of a mixed nature—partly soft and partly hard—apply a blister to the coronet, so as to convert that which is a sub-acute process into an acute action, and with the cessation of activity, hope to stop the deposit. Repeat the blister if absolutely necessary; but there is no occasion to subject more than the coronet, and a couple of inches above that structure, to the operation of the vesicatory. Indeed, blisters act more effectively upon confined spaces. This is all that can be accomplished, save by good feeding and liberal usage: these are essential, because every abnormal change denotes a deranged system; and this is, in the animal, soonest mended by generous diet and perfect rest.



THE CERTAIN TEST FOR OSSIFIED CARTILAGES.

ACUTE LAMINITIS, OR FEVER IN THE FEET.

This term implies that the disease is confined to the laminæ; the word certainly warrants an inference that the other secreting surfaces within the hoof are not implicated; such a meaning is generally conceived to be intended. The name, by inducing erroneous opinion, does much injury; the old appellation of fever in the feet is, therefore, much more characteristic and altogether more correct.

The entire of the fleshy portion of the foot is involved in this terrible affliction; any man, who has had an abscess beneath some part where the cuticle is strong, or who has endured a whitlow, may very distantly imagine the pain suffered by the horse, during fever of the feet. Such an individual, if his creative powers be very brilliant, may vaguely conjecture the torture sustained by the quadruped; but no power possible can realise to the full the anguish sustained by the animal. Man does not, like the horse, rest upon his finger's end, and, if he did, the pain he would then suffer, could not be likened to the terrible affliction borne by the animal, for the following reasons. What is the weight of any man to that of a quadruped? What is the thickness of his skin or the substance of his nail to the hardness and stoutness of the horse's hoof? The human skin is elastic, and the end of the finger permits some swelling of its fleshy portion; but the secreting membrane of the horse's foot lies between two materials almost equally unyielding. Bone is within, and horn is without; the heat soon dries the last, and deprives it of its elasticity. The first is naturally unyielding. Thus, the secreting substance, largely supplied with blood because of inflammation, and acutely endowed with sensation when swollen and diseased, is compressed between the two bodies as in a vice. To conceive the amount of anguish, and to imagine the violence of the disorder, we have only to recognise the pathological law, that nature is conservative in all her ordinizations; she protects parts in proportion to their importance to the welfare of her creatures, and reluctantly allows injury to be inflicted on any vital organ, though she may even permit deprivation of those members which are not essential to the animal economy.

A man may lose a leg; he can live, enjoy life, and to a certain extent effect progression with a wooden substitute. Touch the heart of a man, however, and being ends. The heart is guarded by the ribs, and so securely is it protected that, even in battle, the organ is seldom punctured. The hoof of the horse is almost as important to the animal as is the heart to the human being. In a free state progression is necessary to the support of the body; when domesticated, the horse is valued according to its power to progress.

Yet, the member so important to the creature is, by the nature

of laminitis, frequently disorganised; and a valuable quadruped, by the affliction, may be reduced from the highest price to a knacker's purchase money.

There is no particular breed of horse, neither is any peculiar form of hoof more predisposed than another to this disease. Fleshy, upright, large and small feet, are one and all likely to suffer with laminitis.

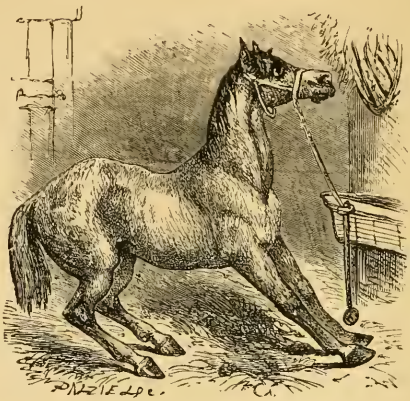
The trotting pony and the fast moving carriage horse, if driven far and long over hard dry roads, will frequently exhibit this disease. Cab and post, as well as gentlemen's horses, after a fine day at Epsom, or at Ascot, not unfrequently display the disorder. Animals which have to stand and strain the feet for any period—as cavalry horses upon a long sea voyage, if, upon landing, they are imprudently used without sufficient rest, will assuredly fail with this incapacitating malady. Any extraordinary labour may induce laminitis. Hunters, after a hard run, and racers, subsequently to heats, are liable to be attacked—especially should the ground be in the state we have before intimated.

Acute laminitis does not immediately declare itself. The pace of the animal, when its work is drawing to a close, may be remarkable, but this is attributed to the effects of exhaustion. The creature reaches the stable; the surface of the body is rubbed over; the manger and the rack are filled; a fresh bed is quickly shaken down, for in the opinion of grooms quiet does horses extreme good. The animal is left for the night, under the impression that it has everything one of the race could require.

The next morning the horse is found all of a heap, and the food untouched; the flesh is quivering; the eyes are glaring; the nostrils are distended, and the breath is jerking. The flanks are tucked up, the back is roached, the head is erect, and the mouth is firmly closed; the hind legs are advanced, to take the bearing from the inflamed fore members; the front feet are pushed forward, so as to receive the least possible amount of weight, and that upon the heels; but the feet thus placed are constantly on the move. Now, one leg is slightly bent; then, that is down, and the other is raised: the horse is, according to a vulgar phrase, "dancing on hot irons."

The first indications—food untouched, glaring eyes, etc.—represent only excessive agony; the position of the body is

symptomatic. The hind feet are thrust under the body in order to take the weight from the front, or the diseased organs; the



ACUTE LAMINITIS, OR FEVER IN THE FEET.

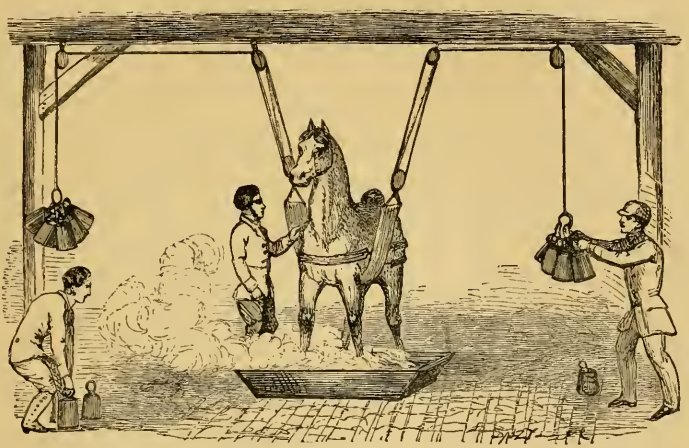
fore feet are thrust forward, and the head held erect, that the inflamed parts may be as much as possible beyond the centre of gravity. In this attitude the wretched quadruped will stand, its sides heaving, and its flesh creeping with the pain within the hoofs, and with the fire that burns within the blood. The teeth are occasionally heard to grind against each other; expressive sounds sometimes issue from the throat, and partial perspirations burst forth upon the body;—it is a horrible picture of the largest agony!

The fore feet are mostly the seat of the disorder. All four may be involved, but the author has only witnessed the two front affected.

Horses do often lie down in laminitis, but they more generally stand. When down, they should be suffered to remain; and when up, the first thing done should be the employment of slings. Place the cloth under the belly with the least possible noise,—the man the horse is accustomed to, with orders to soothe the animal when alarm is excited, should be stationed at the head. The men, who are arranging the slings, should pause, on the slightest sign of fear, and only resume their labour when confidence is restored. The ropes, however, must not be drawn tight and fixed. The ends of the cords should, by means of two extra pulleys, be carried to some distance from the animal. To the end of each rope ought to be

fastened a stout ring, and on this, by means of hooks, weights should be suspended. As the weights are added, the man should caress the sufferer, till sufficient counterpoise be attached to take the principal bearing from the feet without offering much obstacle to the breathing.

With regard to the shoes we should first soften the hoof, by allowing the feet to soak in warm water, in which a portion of any



A HORSE IN SLINGS, WITH THE FORE FEET IN HOT WATER, FOR ACUTE LAMINITIS.

alkali has been dissolved. The slings being applied, the fore feet are to be placed in a trough of hot, soft water, and allowed to remain there till the hoof is quite pulpy. Then one foot is to be gently raised, and the trough partially removed. All this must be done very quietly,—not a word being spoken, and all operation suspended at the appearance of the smallest alarm. The man at the head must not for an instant quit his post.

The foot being released from the water the shoe should be carefully removed from the horse's foot.

Before the shoes are removed, half a drachm of belladonna and fifteen grains of digitalis should be placed in the horse's mouth. Both drugs should be gently introduced, not as a draught or a ball, but in substance, or in the smallest possible bulk. These medicines should be repeated every half-hour, till the breathing is easier and the pulse somewhat altered in character. Then some additional

weight may be added to the slings; and, by taking advantage of similar opportunities, the animal may be eventually lifted almost off the ground, without displaying any inclination to resist.

THE MANNER IN WHICH THE NAILS, WHICH FASTEN ON THE SHOE, ARE TO BE RELEASED FROM THE HORSE'S HOOF, DURING ACUTE LAMINITIS.

Spread under the animal a well-littered bed, and place before him a pail of thin gruel with a bundle of green-meat, and enough has been done for one day.

On the following morning give a dose of ether and laudanum—two ounces of both in a pint of water. Let the horse take his own time in swallowing; do not care if half the drink should be lost. In fact, if the attempt to give the physic should call forth much opposition, abstain from administering it: quiet is of more importance than medicine. On that account, strict orders should be given to admit no visitors; and the strictest injunction concerning silence should be enforced.

While the affection lasts, these measures must be pertinaciously adopted. The feet, the entire time, must be repeatedly put in warm water, not only to soften the horn, but because the chief pain is caused by the congested or swollen condition of the secretive portion of the foot. Congestion, likewise, induces the terminations to be most feared: heat or warmth is, perhaps, the best means of relieving loaded vessels.

The termination to be feared is disorganisation; either from the casting of the hoof, or the descent of the coffin-bone from its natural situation. The first result is preceded by chronic suppuration. A slight division is observed between hair and horn, and, from the opening thus occasioned, a small quantity of unhealthy pus issues, mingled with much bloody serum. Ultimately, the entire hoof loosens and drops off, exposing the flesh parts beneath. Now, all these fleshy parts must have been diseased before they could have separated from their secretion, and such fleshy parts are not the laminæ only, but all those represented in the annexed engravings.

The sudden exposure of parts which, during health, are covered and protected cannot otherwise than cause an extraordinary effect upon the body of the sufferer. Persons who have lost a nail seldom have that substance renewed in all its original integrity.

Deformity, or an imperfect secretion, is generally retained to mark the deprivation. Nature appears averse to the restoration of any of her original structures.

THE SENSITIVE LAMINA AND CORONET DIVESTED OF THEIR HORNY COVERING.

THE SENSITIVE SOLE, FROG, AND BARS DIVESTED OF THEIR HORNY COVERING.

Such a catastrophe is denominated sloughing of the hoof. After that has occurred, it is useless to prolong the suffering by permitting the horse to live. Doubtless, in time, a sort of new hoof would be produced; but it would only be a deformity. It would want the toughness and strength of the original formation.

DIAGRAM.

The new horny covering which invests the foot of the horse after sloughing of the hoof, as a termination to acute laminitis.

Such was the hoof which used to succeed sloughing, under the old plan of treatment. The author is happy to state he has not witnessed such a misfortune since he has followed the practice which he here recommends.

The suppuration just spoken of was not of the copious kind, but was a tardy secretion mingled with bloody serum. It is astonishing such a fact should not have warned veterinary surgeons against following depletive measures. The effusion, however, of which the writer has next to speak is entirely the result of weakness. It does appear most strange that exhausting treatment should have been pursued as with infatuation, despite of so evident a warning. The parts which in health only secrete horn, during exhaustion throw out serum, or the thinner portion of the blood. This separates the coffin-bone from its attachments, while the imposed weight forces the loosened bone from its natural position. To make this more clear, diagrams of a natural foot, and of one which has suffered distortion from acute laminitis, are here represented. In the natural foot the pedal bone is situated close to the

outer crust; in the laminitic foot the bone is forced downward towards the sole, which it ultimately penetrates. There is an artery running around the lower edge of the coffin-bone; upon this artery the animal, if suffered to live, would after displacement of the

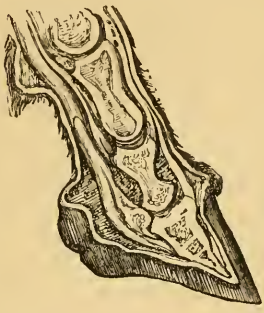


DIAGRAM.

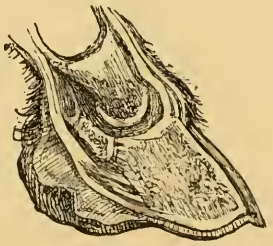
A section of the horse's foot, showing the natural and relative situations of the bones which enter into the formation of the horse's foot when in a healthy state.

DIAGRAM.

A section of the horse's foot after one of the terminations to acute laminitis, exposing the interior of the hoof when the coffin-bone has fallen from its original situation.

coffin-bone be obliged to tread. The consequence is, that a horse having a foot thus distorted cannot, by any possibility, take a sound step; it lives in torture and moves in anguish.

This formation has been too generally spoken of as pumice foot, whereas that peculiarity is altogether distinct. Pumice foot



A SECTION OF THE HORSE'S FOOT, ILLUSTRATING THE DISTORTION WHICH CONSTITUTES PUMICE FOOT

does not entirely incapacitate the horse for labour; it is a chronic disease leading to a very opposite species of distortion, or to a bulging of the sole such as is here illustrated.

After dropping of the coffin-bone has taken place, it is commonly said that the hoof, struck upon the spot once occupied by the coffin-bone, emits a hollow sound; such is not the fact.

THE DEFORMITY WHICH ENSUES UPON DROPPING OF THE COFFIN-BONE.

The space supposed to be empty is immediately filled by an impure horn—a soft transparent substance, which, if the animal be permitted to live, dries or diminishes in bulk, and the front of the hoof falls in. The author once beheld, working in a lime pit near Reigate, an aged animal which, some time previous, had suffered dropping of the coffin-bone; the animal was shod with leather, and had a shoe lifted from the ground by means of large caulkins both before and behind. The hoof, however, was terribly misshapen; it hardly admits of such a description as would readily be understood; therefore the hoof is represented from a sketch made upon the spot.

The other terminations to acute laminitis are metastasis and mortification.

Metastasis is when the fever leaves the feet to fix upon some other and remote part—as the lungs, bowels, brain, eyes, etc. Or, fever of the feet is frequently asserted to be caused by the inflammation "*dropping*" from those parts into the hoofs. When such changes ensue, the body being already weakened, the attack is seldom of a very acute type; but, nevertheless, it may be attended by disorganisation, by distortion, or even by death.

It is a bad symptom should no change be observed in the course of the disorder before the expiration of the fifth day; some sad ending may then be expected, but it does not invariably follow. The animal should be watched night and day. All that can possibly be done to alleviate its suffering should be put into practice. For that end the writer has found nothing equal in its soothing effects to perfect quietude and good gruel, made with a portion of linseed and of beans, mixed with oatmeal. But be sure that laminitis has departed from the feet before the slings are removed; then, even supposing no metastasis to have occurred, do not suddenly take all support from the horse, but remove a weight every day, so that the restored parts may become gradually used to their original functions. On the first sign indicative of a

return to the disorder, restore the full counterpoise, and recommence treatment; for acute laminitis is somewhat treacherous. Very cautiously exercise the invalid upon a piece of meadow land, and as the health appears restored gradually return to the usual method of treatment.

SUB-ACUTE LAMINITIS.

This is a variety of the former disease; the characteristic differences between the two are thus stated by the esteemed late William Percival.

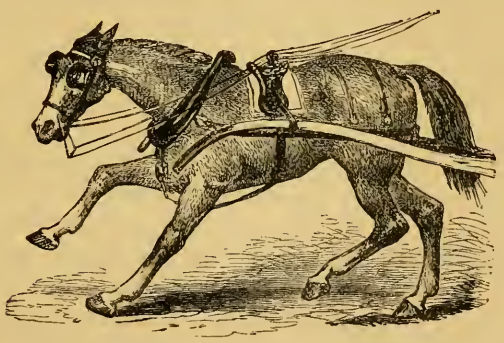
"In neither form is laminitis the disease of the unbroken or unused horse. Now and then acute laminitis will appear in the four or five year old horse, when newly taken into work; more commonly it is witnessed incapacitating the horse when at work, and during the middle period of life. Sub-acute laminitis, on the other hand, is very apt to select the aged and worked animal. Secondly, acute laminitis is the immediate effect of labour—hard, either from its distressful character, or its endurance. Sub-acute laminitis, on the contrary, will make its appearance in the stable, where the horse has been for some time living in a state of idleness or absolute rest. Thirdly, acute laminitis makes its attack directly, or shortly after the application of the exciting cause; sub-acute laminitis approaches so gradually that it is often present some days before its existence is discovered. Fourthly, acute laminitis is marked by great suffering and accompanied by raging fever; in sub-acute laminitis fever is not to be detected, and the mode of progression alone indicates suffering. Fifthly, acute laminitis may terminate in metastasis, suppuration, and mortification; in sub-acute laminitis neither of these issues is to be dreaded, for, if we do not succeed in producing resolution, dropping of the coffin-bone is the customary ending to the disorder."

The above, quoted from memory, presents a graphic contrast and an admirable portrait of the disorder. It is so eloquent in its brevity, that it leaves nothing to be added; therefore, the author will at once proceed to state his views on the subject.

Sub-acute laminitis is always first noticed in the manner of progressing. The master complains that the horse has become slower; that the whip has lost influence over the body; and that the animal, when progressing, appears to jolt more than usual.

This last observation indicates the kind of horses to which sub-acute laminitis is principally confined. Acute laminitis is almost the property of fast saddle-horses; the sub-acute variety more especially belongs to harness horses. The author has lately seen specimens of the sub-acute disease tugging those vehicles which were once fashionable, and which were called "cabriolets." The animal suffering this disorder, endeavours to bring the heels only to the ground. All its fumbling gait, its supposed sluggishness and want of appreciation for the whip, are to be attributed to this desire, to take the weight as much as possible from the seat of agony.

The success of treatment, in a great measure, depends upon the disorder being early detected. Get the horse immediately into slings, as was directed for acute laminitis, and proceed in the same



THE MANNER OF PROGRESSING WHEN SUFFERING UNDER SUB-ACUTE LAMINITIS.

manner with the removal of the shoe. If the bowels are costive allow a portion of green meat until the evil is removed; but do not produce purgation. All medicine, of a debilitating character, must be withheld. Give, night and morning, two drinks, each containing one ounce of ether, in half-a-pint of water, during the day. This, with half-drachm doses of belladonna, as needed to allay any symptoms of pain, will constitute the whole of the treatment.

As regards food, it should consist of sound oats, previously ground, and a moderate allowance of crushed old beans. The water should be whitened, and all hay strictly withheld. The animal should not be left night or day, and gentleness should be enjoined

upon its attendant. The food, however, should not be without limit—three feeds of corn are enough for one day, if the horse will eat so much.

Should dropping of the coffin-bone end the attack, it is only charity to terminate the existence, as no human power can ever again reinstate the diseased tissues, nor bring the pedal bone into its normal position.

The horse, however, which recovers from an attack of laminitis, either in the acute or sub-acute form, should ever after be shod with leather; and were this admirable practice universal, probably, by deadening concussion, it might altogether eradicate the disease. The expense is the objection to its adoption; but, against the cost, the horse proprietor has to ask himself, what are a few shillings extra at each shoeing, to secure immunity from that horrible disorder to which the servant of his pleasure is exposed?

NAVICULAR DISEASE.

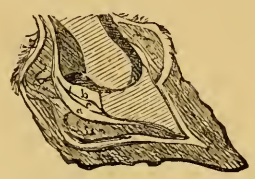
This is the scourge of willing horse-flesh. It is the disease from which favourite steeds mostly suffer; it is not less fatal in its termination than vexatious in its course, and painful during its existence.

The malignancy of the disorder is expended upon the substances which in health are without feeling, but which occasion the most acute anguish when affected by disease—namely, bone, tendon, and synovial membrane. Strictly confined to these structures, and frequently limited to a space not half-an-inch in diameter, the suffering it occasions is such as often provokes the sacrifice of the life, and invariably renders the animal next to useless.

It is confined to the interior of the foot, being, as its name implies, strictly located upon the navicular bone. The navicular bone is a small bone attached to the posterior portion of the os pedis, and resting upon the perforans tendon, which is inserted into the inferior surface of the coffin-bone. A synovial sac is placed between the navicular bone and superior surface of the tendon on which the osseous structure reposes. Synovial sacs are only found in places where motion is great and almost incessant; thus, the existence of this formation apprises us that the bone and tendon, in a healthy state, are designed to move freely upon each other. They do this

while unaffected by disease; the foot, indeed, cannot be flexed, extended, retracted, or placed upon the ground without this busy little joint being put into motion. It is, perhaps, as essential a part (though of small size) as any of the larger structures which enter into the horse's body.

Navicular disease, however, affects only the lower surface of the bone; the upper surface shares another synovial sac, which lubricates the articulation of the coffin-bone with the lower bone of the pastern. This upper surface is never affected; the navicular bone may diminish or wither through disease; still the affection remains confined to its original situation. Disease may lead to fracture of the bone, or to rupture of the perforans tendon; still, the superior portion of the navicular bone, to the last, exhibits a healthful condition.



A DIAGRAM TO EXPLAIN THE SEAT OF NAVICULAR DISEASE.

a. The perforans tendon running beneath the bone, and on which the bone reposes.
b. The comparative size and relative situation of the navicular bone.
c. The synovial sac which facilitates the motions of the bone on the tendon; upon the superior surface of this sac navicular disease is alone exhibited.

The horse, when attacked, commonly has a good open foot—in fact, before disease commences the foot is healthy. An animal, in this condition, is being ridden or slowly led out of the stable. In the last case it, being fresh, may rejoice to feel and sniff the cool air of heaven. It may prance about, and we may admire its attitudes; but in an instant it becomes dead lame. So, a horse may be mounted by a kind master; the creature may be going its own pace, when of a sudden the movement shall change, and the rider will be made conscious that his steed is lame.

In either case the foot is examined. It is cool, quite cool; no stone appears to have injured it—nor is any pebble sticking between the web of the shoe and the sole. Yet the lameness is acute, and does not pass off. Now, to explain this, let the reader turn to the illustration, which was last presented.

The portion of the foot, immediately under the navicular bone, has been placed upon a stone; the stone has been forced against the foot by the immense weight of the horse imposed upon it. The stone, under this impulse, has bruised the navicular bone. But the fleshy frog and the perforans tendon would have to be passed,

before this effect could reach the bone. Are neither of these, also, hurt? Doubtless they are. But the fleshy frog is a highly organised, secretive organ, and probably, by its innate energy, soon recovers from the effect. The tendon is, on the contrary, too soft and yielding to retain any harsh impression. The bone is firm and solid; and thus, that which failed to act upon either of the intervening parts, leaves a lasting injury upon the osseous structure, which moreover is held stationary by the coronary bone, and which is disposed to display injury, being covered by synovial membrane.

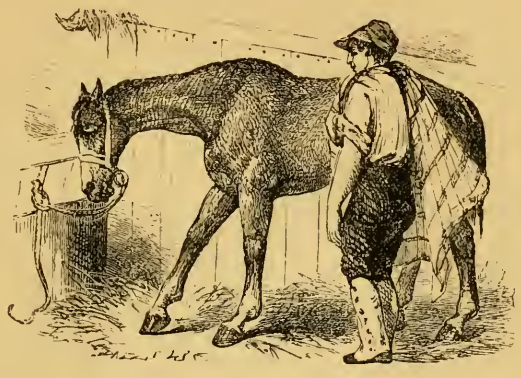
The navicular bone belongs to a peculiar class, called "sesimoid, or floating bones." These are more highly organised than the generality of osseous structures—in short, quite as much, or rather more, than the human tooth. Everybody must be acquainted with the anguish occasioned by unexpectedly biting upon a hard substance. The tooth, however, is coated with crystalline enamel. The bone is covered by delicate synovial membrane. The impression is, therefore, more likely to be lasting with the last than the first.

After expiration of a week, however, the lameness disappears, and the proprietor fondly hopes all is over. The animal may work soundly for months—sometimes it never fails again. Generally, however, after some period, extending from six to nine months, the lameness reappears. This time the treatment occupies a longer space, and the subsequent soundness is of shorter duration. Thus the malady progresses; the period occupied in curative measures lengthens, while the season of usefulness diminishes, till in the end the horse becomes lame for life.

The worst of it is, that the pain in the lame foot occasions greater stress to be thrown upon the sound member; the result generally is, that both legs ultimately become affected with the like disease: such is ordinarily the case. The horse, with a tender foot, will always bring it gently to the earth; but this circumstance obliges the animal to cast the other foot to the ground with heedless impetuosity. The consequence is, the sound foot is sooner or later forced upon some stone or other inequality. From the law of sympathy, the disease subsequently makes rapid strides, for at death both feet are usually found in a similar condition.

The effect of these repeated attacks is soon shown. The anguish has been likened to toothache, only it must assuredly be a tooth-

ache twenty times magnified. All people know, "there never yet was philosopher who could withstand the toothache;" but, think of the poor horse, with twenty toothaches compressed into one agony! The man can seek a thousand changes to divert his suffering; the simple horse cannot even drink intoxicating fluids, and has hitherto not learned to smoke. The suffering, therefore,



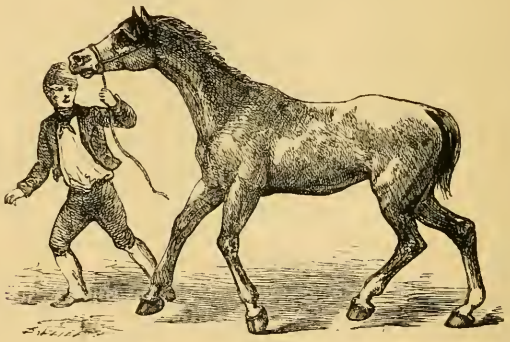
A HORSE, WITH NAVICULAR DISEASE, POINTING IN THE STABLE.

continues. And as man strives to spare a decayed tooth, by masticating on the other side of the mouth, the horse endeavours to ease an aching foot by leaning all its weight upon the sound limb. Thus it learns to point in the stable, or to advance one leg beyond the centre of gravity, leaving the healthy member to support the entire weight of the body

A foot, thrown out of use, decreases in size. Nature has given certain parts for certain purposes; and if these purposes are avoided, those parts diminish in bulk. Wear the arm in a sling for any extended period, and the arm will sensibly grow smaller, or become withered. So the horse's foot, spared in progression and pointed in the stable, obviously changes its shape. The quarters draw inward; the heels narrow; the frog hardens and decreases; the sole thickens and heightens; the crust becomes marked by rims, and grows considerably higher. In fact, the foot, from being an open, healthy foot, becomes a strong, contracted, or diseased member.

THE UPRIGHT FASTEN AND HARD UNYIELDING HOOF, INDICATIVE OF CONFIRMED NAVICULAR DISEASE.

The effect of the disease is speedily shown by the animal progressing entirely upon the toe, whereby the front of the shoe becomes much worn, as was shown in the previous engraving. Indeed, it is not unusual to see shoes taken from horses having navicular disease with their front edges worn positively to a cutting sharpness. When the animal is in this stage, the mode of progression is usually what is termed groggy—that is, the hind feet, which are never affected, step out as boldly as ever, but the fore feet are limited in their action. They cannot be advanced far, because extension causes the perforans tendon to press upon the



THE TROT, PECULIAR TO NAVICULAR DISEASE, GENERALLY TERMED GROGGINESS.

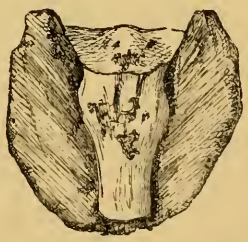
navicular bone; the leg cannot be bent, because flexion moves the perforans tendon upon the navicular bone. The animal, thus doubly disabled, endeavours to make up by quickened movement for that which it lacks in perfect action. It dare not bring the heel to the ground or take long steps. It therefore progresses upon the toes, and indulges in very short but quick movements of the fore feet; and a horse, thus affected, may be challenged, though unseen, by the "*patter, patter, clatter, clatter,*" which it makes.

Navicular disease appears to the author to have been entirely mistaken, as regards its treatment. It is administered to, as though it consisted in violent and acute inflammation; whereas it is caused by a different process—namely, ulceration. Inflammation excites the whole system, and occurs in strong bodies; ulceration is a diseased condition, peculiar to the aged and to the weakly. Navicular

disease is, so far as the writer's knowledge extends, unknown in the unbroken animal. It mostly affects the adult or the aged. It is not inflammatory,—for the foot, in the first instance, exhibits no heat, and in the after stages never becomes more than warm. Often, the warmth is so very slight that practitioners have to adopt a kind of stratagem, to determine which is the hotter of the fore feet. A pail of water is brought forward, and sufficient to thoroughly wet both hoofs is thrown over the feet. The parts are then watched, and whichever becomes dry the soonest is reasonably considered the warmer hoof of the two.

Moreover, the consequence of this disease are absorption, which it takes years to effect—not deposition, which is accomplished in a few days. The bone lessens in size, sometimes grows thin, till ultimately it may fracture; the tendon loses in substance, and its fibres separate till at length they may rupture. All internal structures, which enter into the composition of the foot, grow less and less, till the hoof becomes obviously small or contracted, for it is a law of nature that, in the living creature, the contents should govern the covering. Thus, the brain controls the skull; the lungs regulate the chest, etc., etc. The horn alone increases; but it is a curious fact that nature always endeavours to protect the part she allows to suffer from disease. Thus, in rickets, with children the bones of the legs frequently curve; but nature, true to her principles, strives, by extra deposition, to strengthen the parts which threaten to break through weakness.

All tokens declare the navicular disease to be a chronic affection, attended by symptoms of bodily weakness. The accompanying example of the disorder, taken from the body of a horse, which was killed for incurable lameness, will fully illustrate this fact.



A MORBID PREPARATION, KINDLY LENT TO THE AUTHOR BY T. W. GOWING, ESQ.

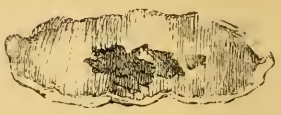
The diseased surface of the navicular bone exposed, and the affected tendon turned back upon the lower part of the os pedis.

In this specimen, the navicular bone occupies its natural situation between the wings of the os pedis. That portion of the tendon which once shared and concealed the disease is turned back upon the sole of the coffin-bone. What does the inspection disclose? Three small holes

within the bone and a few stains of blood, which denote irritation upon the tendon. For, as the disease progresses, synovia ceases to be secreted; the navicular joint becomes dry and is subject to the most torturing irritation every time the leg is moved.

That the one presented may not by the reader be supposed an extreme case, produced to support the writer's opinions, another specimen of the disease is given; but, on this last occasion,

THE SUPERIOR SURFACE OF THE NAVICULAR BONE.



THE INFERIOR SURFACE OF THE SAME BONE.

both sides of the navicular bone shall be exhibited. The upper surface appears perfectly healthy; the lower surface only displays a large clot of blood, and a small but comparatively deep hole.

Supposing the reader to be convinced of the justness of the writer's views, the treatment which these recommend shall be stated. Ulceration, in any form, proves the body to be weak or exhausted. Feed liberally, chiefly upon crushed oats and old beans. Attend to any little matter, in which the horse's body may be wrong; but do little to the foot, beyond every other night soaking it one hour in hot water, for the first fortnight. Afterwards, apply flannel bandages to the leg, put tips upon the hoofs, and wrap the feet up in a sponge boot, having first smeared the horn with glycerine. This, with a very long rest, is all it is in our power to accomplish. The rest, however, should be proportioned only to the proprietor's pocket, or to his powers of endurance. In the first instance, six months' rest, in a well-aired stable, and three subsequent months at slow agricultural employment, will not be thrown away, but will be likely to prevent future annoyances. After one relapse, the treatment is all but hopeless. The horse may be again restored to soundness; but the disease, which has with time gained strength, will be all but certain to reappear.

This, probably, may be the fittest place for stating the writer's reason for objecting to the treatment generally adopted.

Bleeding from the toe is decidedly objected to, because there never are any signs of inflammation present, but rather those symptoms which favour the belief that too little blood circulates within the foot. Blistering the coronet is more likely to augment the crusts than to reach the disease; and the tendency of navicular derangement is to thicken the horn. The same reasoning applies to paring out the foot and placing the hoof in poultices—it is more likely to act upon and lead to activity in the secreting membrane, which is near the surface, than to operate beneficially upon a remote joint. Objection is taken to the feet standing in clay, because the cold, produced by evaporation, is disposed to drive blood from the parts, which already have too little.

In extreme cases neurotomy, or division of the nerve, is the only resort. For a detailed account of that operation, the reader is referred to the next chapter. It permits the horse to be of some service to the master, and allows the animal an escape from the agonies of a cruel disease; it is, however, not final. It conceals the lameness—it never cures the disorder. The internal ravages still go on; and though the nerve of the leg has been properly divided, yet, at an uncertain period, nerves generally reunite, and the part which was deprived of sensation may become once more sensitive to pain. Moreover, no eye can look upon the internal ravage. Sensation, destroyed in a foot, tempts the horse to throw even more than its proportion of weight on a part weakened by disease. The bone has fractured, or the tendon has ruptured, under too sudden a test of their integrity.

For the above reasons, neurotomy is always most successful when early performed. In the primary state of the disorder, a restoration of the foot to its healthy functions has seemed to banish the affection. Pressure being given to the neurotomised organ, health has occasionally returned; and when the time has arrived for the reunion of the nerve, that event has been signalised by no reappearance of lameness.

But when the disorder has continued so long as to weaken the structures of the foot, operation is always attended with hazard. The nerve may be properly divided; the operation may be admirably performed—still the parts, weakened by the joint actions of active disease and of long rest, have become disorganised. Pressure being suddenly restored, the debilitated structures could not

sustain the restoration of that burden they were originally formed to endure, when rupture or fracture may result.

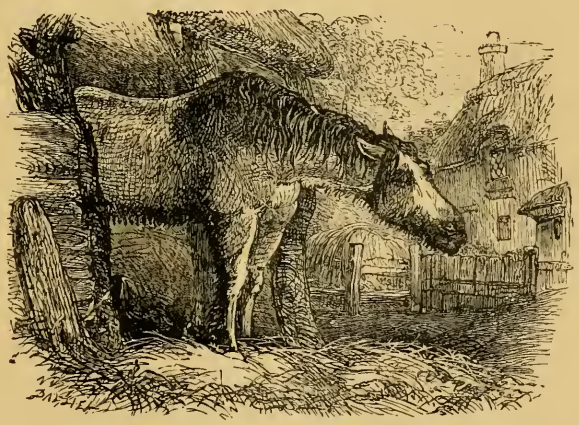
For the above reasons, and because the sound member is always disposed to exhibit the disorder which incapacitates one foot, never delay adopting the only chance of certain relief. If from pecuniary motives, or from better but mistaken feelings, the proprietor hesitates to subject his dumb companion to the surgeon's knife, never afterwards should he repent of such a resolve. With delay, the opportunity of benefit has passed; the operation, to be successful, should be resorted to upon the second appearance of acute and decided lameness.

CHAPTER XIV.

INJURIES—THEIR NATURE AND THEIR TREATMENT.

POLL EVIL.

Poll Evil consists of a deep abscess, ending in an ulcerous sore, which has numerous sinuses. The situation of the affection is



THE POSITION OF THE HEAD BEFORE AN ENLARGEMENT ANNOUNCES THE EXISTENCE OF AN ABSCESS ON THE POLL.

the most forward portion of the neck, near the top of the head, which part is peculiarly liable to injury, especially in agricultural horses.

The gentlemen who superintend the laying down of stable floors always make the pavements of the stalls to slant from the manger to the gangway. They either know nothing about the habits of the horse, or they disdain to think about so trivial a matter as the convenience of an animal. Their stables are built for men; and it is sufficient if the places will hold whatsoever man chooses to put into such out-buildings.

The horse is most at ease when the position takes the strain off the flexor tendons. That end is accomplished when the hind legs are the higher portion of the body, or when the ground slants in precisely the opposite direction to which the flooring of all present stables incline. The animal finding the slope, which is most convenient for the builders' purposes, adverse to its comfort endeavours to compound the matter by hanging back upon the halter, thus getting the hind feet into the open drain which always divides the stalls from the gangway.

The rope should be stout which has to sustain the huge weight of the horse; in proportion to that weight, of course, must be the pressure upon the seat of poll evil. Pressure, as a natural consequence, stops circulation. Upon circulation being freely performed, health, secretion, and even life itself is dependent. The flow of blood to any part of the body cannot be long prevented without unpleasant sensations being engendered. Numbness and itching are the first results. The horse tries to master these by rubbing its head violently against the trevise, or division of the stall. Friction, when applied to an irritable place, is never a soothing process; when instituted by the huge strength of a horse, its probable ill effects may be easily surmised. It is, therefore, no legitimate cause for wonder if some of the fleshy substances, compressed between the external wood and the internal bones of the neck, become bruised, and deep-seated abscess is thus provoked.

This, however, is not the sole cause; there are others equally potent, and generally springing from the same source—namely, from human folly. How much of animal agony might be spared if man, in the pride of superiority, would deign to waste an occasional thought upon the poor creatures which are born and live in this country only by his permission, and to labour in his service? Stable doors are commonly made as though none but human beings had to pass through them. The tallest of mankind, probably, might enter a stable without stooping; but does it therefore follow that a horse can pass under the beam without assuming a crouching position? Many horses learn to fear the doorway. They shy, rear, or prance, whenever led towards it. Man, however, refuses to be instructed by the action of his mute servant; those symptoms of fear, which are the bitter fruits of

experience, are attributed to the patient and enduring quadruped as exhibitions of the rankest vice.

Low doors, such as usually belong to stables, are among the most frequent causes of poll evil. The horse, when passing through them, is either surprised by something it beholds outside the building, or checked by the voice of the groom. The sudden elevation of the head is, in the animal, expressive of every unexpected emotion. Up goes the crest, and crash comes the poll against the beam of the doorway. A violent bruise is thereby provoked, and a deep-seated abscess is the sad result.

The horse likewise suffers from the representatives in brutality of him for whose benefit it wears out its existence. Carters display their ignorance by getting into violent passions with their teams. "Whooay" and "kum hup" are shouted out; the huge whip is slashed, and the snaffle jagged, till mute intelligence is fairly puzzled. Were mortals in the like position; subject to the same terrible chastisement, and at the same time forbidden to inquire the wishes of their commander, they would be in no better condition. The panting, sweating, and starting of the poor confused quadrupeds announce their terror. The driver, too enraged to understand himself and too impatient to delay punishment upon the object of his wrath, resorts to the butt-end of his heavy whip. Some wretched animal is struck upon the poll, for the head is always aimed at when stupidity quarrels with its own ignorance, and a dreadful disorder is established.

All the causes of poll evil may, however, be reduced to one—namely, to external injury. The first result of such a cause is pain whenever the head is moved. Motion enforces the contraction of the bruised muscles; and the agony growing more and more acute the sufferer acquires a habit of protruding the nose in a very characteristic manner, long before the slightest symptom of the malady can be perceived. When forced to bend the head towards the manger, it generally hangs back to the length of the halter; for although so doing occasions pain, the position renders the necessary angle of the head upon the neck as little acute as possible. The anguish attendant upon the earlier stages of the disease is exemplified by the length of time occupied in emptying the manger. At this stage nothing is apparent; at this period, also, great cruelty is too often exercised when the collar is forced

over the head, regardless of the struggles of the acutely diseased animal.

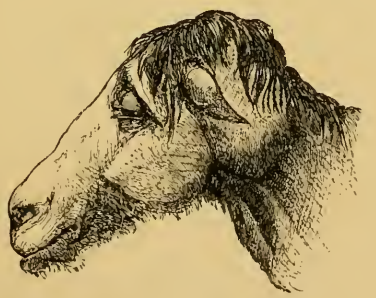
Should the seat of poll evil, at this stage of the disease, be particularly examined, the most lengthened inspection, when prompted by expectation, may fail to detect even an indication of probable enlargement. Pressure, or enforced motion of the head, excites resistance. A few weeks, in some cases, and the swelling becomes marked, or prominent. In others, the enlargement is never well developed: instances of this last kind invariably are the most difficult to treat, for in them the seat of the disorder is always most deeply seated. The size of the tumour is therefore always to be hailed as an indication that the injury is tolerably near the surface, and, consequently, more under the influence of remedial measures.

After pressure has been made, the agony occasioned causes the animal to be difficult of approach. The common method of examination is, however, very wrong. No good is done by inflicting torture. Something, on the contrary, is concealed. Place the fingers lightly on the part, and allow them to remain there till the fear, excited by a touch upon a tender place, has subsided. Then, and not till then, gradually introduce pressure. The more superficial the injury the more speedy will be the response. The longer the time and greater the force requisite to induce signs of uneasiness, the deeper, as a general rule, will be the centre of the disease.

In either case, there is little good accomplished by those applications which are recognised as mild measures. Fomentations and poultices commonly waste valuable time, and at last prove of no avail. Therefore, blister over the place. Obviously, the employment of more active treatment is, at present, forbidden. Do not, however, give the carter so much liquid blister, to be rubbed in by his heavy and coarse hand; but lightly paint over the seat of the supposed hurt with spirituous or acetous tincture of cantharides. Do this daily till copious irritation is produced, and, before that dies away, repeat the dressing. Keep up the soreness, but do no more. Never apply the tincture upon active vesication; otherwise a foul sore, ending in a lasting blemish, may be the result. Make the poll merely painful. An additional motive will, thereby, be instituted to keep the head perfectly quiet, for

constant motion provokes the worst consequences of poll evil, causing the confined pus to burrow or to form sinuses.

The foregoing treatment has been proposed because the tincture, when applied by means of a brush, penetrates the hair more quickly, acts quite as energetically, and is less likely to run down upon other parts than the oil of cantharides, which the heat of the body always renders more liquid. It is advised to be used, because it establishes an external inflammation. Inflammation in living bodies, like fires preying upon inanimate substances, have an attraction for each other. All injuries which lead to suppuration likewise have a tendency to move towards the surface; and these two laws acting together very probably may tend to the speedier development of poll evil, thereby shortening the sufferings of the animal. Should they not have that effect, the vesicatory is beneficial. About the head of the horse are numerous layers of thin tendon, which are termed fascia. Through this substance, matter absorbs its way with difficulty. It is, therefore, almost imprisoned, and motion always disposes the pus to seek new outlets. Thus pipes, or sinuses, are formed; these constitute one of the worst symptoms attendant upon poll evil.



POLL EVIL DURING THE FIRST STAGE.

As soon as the swelling appears, watch it attentively. Wait till some particular spot points, or till it feels softer, if it be not more prominent than the surrounding substance. Then have the animal cast. Being down, take a keen knife and open the spot before indicated. That being accomplished, pause while the secretion flows forth. Afterwards, insert into the cut a small flexible probe. When its progress is impeded, employ the knife

with a director. Continue doing this till the seat or centre of the disease has been gained.

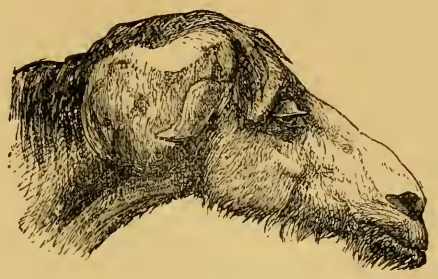
Remember, however, you are not hacking at the family loaf; it is living and sensitive flesh you are wounding. Therefore, be very careful your knife is thoroughly sharpened, and is of sufficient size; mind, also, that all the cuts run smoothly into one another, so as to leave clean surfaces for the healing process to unite. Having reached the heart of the disorder, proceed to empty out all the concrete matter. That done, wash out the part with a syringe and the coldest spring water. Afterwards examine the cavity. Excise any loose pieces of tendon, or of ligament, and cut until a healthy aspect is everywhere presented. Then rub the sides of the deep-seated wound with lunar caustic, and let the horse rise. Give orders that the sore is to be thoroughly moistened, thrice daily, with the solution of the chloride of zinc, one grain to the ounce of water; and, placing a rag dipped in a solution of tar over the wound to keep off the flies, return the horse to the stable.

If the disease be left to run its course, the swelling generally increases, while numerous openings at last disfigure the enlargement. From such drain a glairy discharge. This adheres to the surrounding parts and, joined to the miserable expression of the countenance, gives to the horse a peculiarly unpleasant appearance. The flesh wastes under the perpetual anguish, and the half-conscious aspect of the creature justifies a suspicion that the brain is affected.

In that case, proceed as before directed concerning casting the horse and the knife with which you operate. Have the blade rather too large than too small.

The horse being down, do not attempt any display of your proficiency. Look well and long at the part intended to be operated upon. Decide in your own mind the course in which the knife is to move. That course should be influenced by the direction in which you may probably separate the greater number of sinuses. In the engraving on page 415, there are four holes, each indicating the presence of a sinus. The supposed direction of the knife is laid down by dotted lines. The primary and lower incision includes three of the pipes. That made, another connects the other sinus with the longer incision; the after labour necessitates the cleaning of the central sac, removing all the hanging pieces,

also probing the sinuses, and making sure all are fairly opened. If any are found unopened, a director should be inserted, and the channel should be connected with the chief wound, by means of a smaller knife.



POLL EVIL, IN ITS SECOND STAGE, OR WHEN READY FOR OPERATION.

Two cautions are necessary to be given with regard to the treatment of poll evil; never permit the knife to be applied upon the root of the mane. Underneath the hair which decorates the neck of the horse lies an important ligament, the ligamentum colli, which supports the head and keeps it in a natural position. Should this structure be divided, the head would immediately lose its support and fall back towards the chest. All the evils which might be anticipated may not spring from the division of that development; but, it is well to spare it, although the prostrate animal should have to be turned over and the operation have to be continued on the other side. Also, when working the creature subsequent to its recovery, never use a collar. Wounds, although perfectly healed, are apt to remain morbidly sensitive. Serious accidents, over which the reader would deeply grieve, may occur from the collar, whilst being put on, touching the part which once was diseased. A breast-strap is, therefore, to be much preferred.

There are several popular methods of treating this disease. All, however, are cruel—one is barbarous when properly conducted; none are efficient under the direction of a person possessing the smallest feeling. The injection of potent caustics in solution, or violent compression upon an exquisitely tender swelling—even until the force employed amount to that power which can bring

the sides of a distant internal cavity together, drive out the corruption and hold the part in that position while healing is established—have been largely advocated. Whoever could increase the suffering of a mute and patient life to that degree, which the last method necessitates, would merit a much severer punishment than the writer can afford space to detail. Of these modes of cure, the author can profess no experience. He has, however, seen injections used; in no instance have they been successful. The time which they occupied was enormous, and the expense with which they were attended by no means small. The man who hopes to eradicate this disease should never have recourse to them.

Another process, formerly very popular, consisted in slicing the living flesh in a very coarse and vulgar manner; that, however, was merely preparatory. The chief dependence was placed in boiling liquor, which was inhumanly poured into the wounds. After such a method were all sinuous sores treated by an ignorant and uneducated quack, who especially delighted in eradicating such forms of disease. The writer has heard terrible descriptions given of the agony produced, and equally revolting has been the picture of the filth employed by this unqualified horse-doctor. Still, however the course which has been mentioned is reprobated, our heaviest condemnation should alight upon those persons who could so violate the sacredness of their trusts as to surrender any creature to the torments of so horrible a remedy.

In poll evil the only certainty reposes on the knife. To be properly employed, however, it should be used as though the person invested with it was, for the time, divested of all feeling. He who accepts it must think only upon what he is about to perform, and must summon resolution to do it quickly. In surgery, hesitation is positive cruelty; the knife, to be curative, should be gracefully moved through the living flesh.

All operations, excepting those of a very trivial nature, should be performed upon animals only whilst under the influence of chloroform, as it enables the operator to take his time, and prevents those repeated struggles of the quadruped which interfere so much with the intentions of the surgeon. The inhalation of this anæsthetic renders the horse insensitive to pain, and the operator at his ease to use his knife to the best advantage.

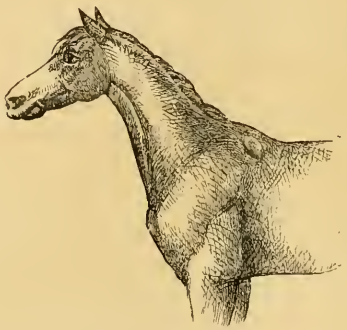
FISTULOUS WITHERS.

This disease, in its chief characteristics, closely resembles poll evil. It, however, differs from that disorder in one fortunate particular—poll evil must come to maturity before its cure can be attempted with any hope of success. Injury to the withers is easiest eradicated when attacked upon its earliest appearance; both, however, in their worst periods, proceed from pus being confined, from it decomposing and its establishing numerous sinuses. When disease has reached this stage, the only certain cure is the free but skilful use of the knife.

Fistulous withers, in the first instance, is an injury to one of the superficial bursæ, which nature has provided to facilitate the movement of the vertebral spinal points under the skin. The hurt is occasioned by badly made saddles, but more especially by the ladies' saddles. Some fair equestrians delight to feel their bodies lifted into the air, and enjoy the trivial shock of the descent; such movements, however, necessitate the weight should be leant upon the crutch and stirrup. This kind of exercise is never indulged in by good female riders, as no saddle, however well constructed, can resist the constant strain to one side. Friction is produced; a bursa is irritated, and the animal will, under the best treatment, be rendered useless for a fortnight. Rolling in the stalls is also reported to have occasioned this affection; so, likewise, is the heavy hammer of the shoeing smith, intemperately employed to chastise the transient movement of an observant horse.

When first produced, the remedy is certain and easy. A swelling about the size of an egg appears near the withers, upon the off side of the body. Go up to the horse upon that side; have with you a keen-edged and sharply-pointed knife of pocket dimensions. Stand close to the animal; then impale the tumour; and having the back of the blade towards the quadruped, cut quickly upward and outward. Mind and stand very close to the centre of the body, as the pain of this trivial operation is apt to make the creature lash out and prance. At the spot indicated a person is perfectly safe; neither hoof nor leg will touch that particular place, or even come near it. Rest one hand on the back, and by your voice reassure the startled creature.

The swelling being divided, exchange the knife for a lunar caustic case; smear over the interior well with the cautery, and all the business is over. Never, however, attempt to pass by the heels of a steed which has been pained. The animal may suspect your motives, and the hind feet of the horse are the most powerful weapons of offence and of defence. Have the creature backed from



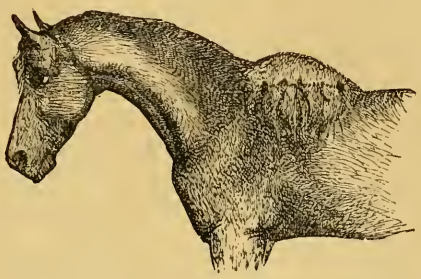
THE SLIGHT ENLARGEMENT WHICH, BADLY TREATED OR UNATTENDED TO, MAY END IN FISTULOUS WITHERS

the stall ere you attempt to quit it. Subsequently, keep the wound moist with the lotion composed of chloride of zinc, one grain to the ounce of water; also have the part covered with a rag, moistened with solution of tar. In nine or ten days the incision will have healed, and after the lapse of a fortnight the animal may return to its ordinary employment.

Sometimes the knife cannot be used on the first appearance of a swelling on the withers. That is when it is hard, and does not become soft on the application of hot fomentations and such treatment that is adopted with intent to cause the formation of pus (commonly called bringing it to a head). Under the circumstances the knife must be withheld for a time. No tumour should ever be opened until matter has been thoroughly formed. The hard swelling is the commencement of an abscess which should be brought to maturity. If fomentation fails, by applying over and around it a blister, consisting of cantharides and turpentine, and twenty-four hours afterwards fomenting three or four times daily—until the swelling, by becoming soft, pits on pressure—then the

knife may be inserted, and the treatment the same as before prescribed.

With all our care, unfavourable symptoms will arise; numerous holes are formed upon the enlargement. These are the mouths of so many sinuses, and from each exudes a foul discharge. The poor quadruped evidently suffers greatly; it will almost stand still and starve, rather than brave agony by violent motion.



A HORSE WITH FISTULOUS WITHERS IN THE WORST STAGE.

The only remedy is by operation. Make an incision, so as to embrace the greatest number of holes; then, cut from the other openings into the main channel. This done, have the sides of the wound held back, while the centre of corruption is cleaned out. Such is a very filthy and unpleasant office: if the bones are affected, all the diseased parts must be removed. When slight, the tainted portions may be scraped away; when of long standing, the spines of the vertebræ have been sundered with the saw, and thus taken from the body. At any risk, none but healthy bone must be suffered to remain; all discoloured or white portions of the bony structure must be extirpated, and none but that which is of a healthy pink colour suffered to continue. If a particle of unhealthy, osseous growth is left behind, the wound may close, but it will break out again and the disease become as bad as ever.

The cleansing being accomplished, apply the cloth over the wound, and keep wet with the lotion, formerly directed to be used.

Sometimes the sinuses will take a dangerous direction, and, favoured by the action of the shoulder, will burrow from the

withers to the chest or elbow. Then the knife cannot be employed. Should a pipe incline to this course, but be of comparatively short extent, insert a little bichloride of mercury down the channel. This is best done by powdering some of the salt. Dip the elastic probe, which has recently been down the sinus, into the powder. Reinsert it, and continue to repeat this action till all the bichloride is expended.

If the sinus should have run its entire course, but not have found an exit below, then employ a long guarded seton needle, such as can be purchased at all veterinary instrument makers. Insert this in its guarded state, and having pushed it as far as it will go, give upon the end of the handle a moderately-sharp blow; this will force out the cutting edge and drive the point through the flesh. Pass a long tape with a knot at the further end of it through the opening near the point, and withdraw the instrument, leaving the tape in, after another knot has been tied at its other extremity.

A GUARDED SETON NEEDLE.

THE SETON NEEDLE PROTRUDED, AND SECURED WITHIN THE HANDLE BY MEANS OF A SCREW.
The screw being loosened, the button is struck, and the sharp needle shoots forward, cutting its way through any interposing obstacle.

Thus, a seton is established, and a depending orifice is instituted. The tape will act as a drain to the morbid secretion, while the irritation produced by it will also remove the callous lining of the pipe. A healthy action will thereby be established; and, so soon as the inferior wound discharges a full stream of thick creamy pus, the seton may be cut out, with a conviction that its office is fulfilled. When recovery has been secured, turn out into a rich pasture, as the grass acts as an alterative, and the lowering of the head whilst cropping the herbage necessitates that action of the neck which exerts a healthy influence on the parts previously involved in disease.

FISTULOUS PAROTID DUCT.

This is a most serious evil, rather than a quickly-killing disease. The animal, which is thus afflicted, may endure for years; but each meal consumed, and each day survived, rates as a period of misery. When it is considered how much the happiness of the lower order of beings depends on merely feeding and living, it will be at once apparent how much the horse has lost, when all enjoyment has departed from eating; when mere existence is embittered by being a prolongation of the suffering. The digestion becomes deranged, because the saliva, or a valuable secretion, imperative to the proper performance of the function, is absent; while every moment is a pain occasioned by the agony of a diseased stomach, and the anguish attendant upon a fistulous sore.

The parotid duct is the tube by which the saliva, secreted by the gland, is, during the act of mastication, conveyed into the mouth and mingled with the food. The parotid gland lies at the spot where the neck joins the jaw; within the interior of that body numerous fine hollow vessels unite and unite. These, at each junction, become larger and fewer in number, till at length they all terminate in one channel, which is the duct immediately about to be considered. It leaves the gland and travels for some space upon the inner side of the jaw; after which it curls under the inferior border of the bone and runs in front of the large masseter muscle of the horse's cheek.

Its injury is frequently occasioned by hay-seeds or particles of food during the process of comminution, entering the open mouth of the duct; these, subsequently becoming swollen, prevent the free egress of the saliva. The secretion, nevertheless, goes forward and accumulates within the tube, which it greatly distends. A confined secretion produces the most exquisite agony. The motion of the jaw stimulates the gland to pour forth its fluid; thus, every mouthful which the animal is forced to eat is not only the cause of suffering, but likewise occasions additional pressure to a channel already enlarged to bursting, and which at length bursts.

Another provocative is calculus, or stone, which is sometimes taken from the cheeks of horses, they being of enormous comparative magnitude; the natural tube would not admit a pea. Con-

cretions have been removed from this narrow passage as large as a pullet's egg. Such an obstacle not only impedes the flow of saliva, but produces additional anguish by the distension it occasions, and by the hindrance so hard a substance offers to every motion of the animal jaw during the necessary period of mastication.

THE PAROTID DUCT DISTENDED BY A SALIVARY CALCULUS.

Every puncture made into the substance of the duct, and every rupture of the canal, speedily become fistulous sores. The saliva constantly pours through the opening thus instituted; the healing process is thereby prevented, and the edges of the wound rapidly become callous. It is, however, painful to be obliged to state that the stable fork in the hand of an intemperate groom is the instrument by which these punctures are too frequently occasioned.

Gentlemen, when engaging people to attend upon their animals, should always be very particular concerning temper. An irritable person, however smart he may appear, is obviously disqualified for such an occupation. A man of an evil temper should never be engaged.

There is an old proverb which, being "the condensed wisdom of ages," teaches that "the master's eye fattens the steed." Most of modern masters dislike nothing so much as trouble. The stable is given over to the servant. No Eastern despot is so absolute as the groom in his dominions; he kicks and abuses its inhabitants at his pleasure. All that comes into or passes out of the building pays toll to the invested ruler. Five per cent. is levied upon the hay and corn merchant; the dung is sold as a legitimate perquisite; the bills of the harness and the coachmaker are taxed one shilling in the pound by the most ignorant groom, and often much higher by the properly initiated. Thus, the idle man pays dearly for his ease. There is no luxury so expensive as a want of wholesome energy.

The process of mastication causes the saliva to be secreted.

At each motion of the jaw it is squirted forth with violence; every drop of the fluid passes through the false opening—no portion finds its way into the mouth. The running of the stream down the cheek wears away the hair; while the absence of a valuable constituent towards perfect digestion occasions the diet not to nourish the body. The animal loses flesh, and quickly assumes a miserable appearance, which makes the proprietor long to rid his sight of so pitiable an object.

A HORSE, HAVING A FISTULOUS PAROTID DUCT, IN THE ACT OF EATING.

The cure may be effected by making an adhesive fluid, by either saturating the strongest spirit of wine with gum mastic, or dissolving indiarubber in sulphuric ether. Then, when the horse is not eating, by paring off the hardened edges of the wound till blood issues therefrom. Subsequently allow the bleeding to stop, and place over the orifice a piece of strained indiarubber. Over that put a thin layer of cotton; fasten one end of the cotton to the hair of the cheek, by means of the adhesive preparation. That being dry, tighten the cotton and glue down the opposite extremity. Next, attach another layer of cotton, and subsequently another. Afterwards, fasten more cotton, some of it crossways; and, having added as many layers as would make a good body, saturate the whole with the adhesive solution before alluded to.

The hair affords a good ground, to which any other substance can be fastened; but it is rendered better by being thoroughly washed with soft soap and warm water. The ablution deprives the skin of the horse of its naturally unctuous secretion, and permits the adhesive application a better chance.

The horse should be allowed no food which necessitates mastication. The head should be fastened to the pillar-reins during the process of cure. Thin gruel only should be presented while treatment is progressing, and that should be continued until the covering falls off. Should the wound not be healed allow a couple of days to elapse, but give no solid food. Permit the

horse to rest on refuse tan (not straw, which might be eaten), during all this time. Afterwards, renew the attempt, and repeat it again, if necessary—though the first trial generally succeeds.

Before concluding, it may be well to arm the reader against those practices generally adopted by horse doctors. These practices consist in the use of the red-hot budding iron, which is among them a very popular application to a fistulous parotid duct. The theory which induces this resort is a belief that the heated iron induces an eschar, and the wound closes before the crust falls off. Red-hot iron is, however, far more disposed to destroy substance than to favour growth; and probably its curative properties could have gained faith among no other class. Possibly there exists no other body which would credit that to burn a hole larger was the best way to close it. Another artifice is to inject caustic lotions up the duct, and thereby occasion the gland to slough out. Against such cruelty the author is pleased to think little need be said. The operation, when successful, causes so much irritation as endangers the life; for the body of the gland is permeated by so many and such important vessels, as render the termination always very dubious.

PHLEBITIS, OR INFLAMMATION OF THE VEIN.

Formerly it was the custom to bleed horses for everything and for nothing. It was not even suspected that a creature, which exists only to labour unto the limit of possibility, is far more likely to be the victim of debility than of repletion. It never occurred to any master that his wretched animal wanted blood putting into it rather than could endure the smallest quantity of blood abstracted from it. However, formerly, bleeding was a favourite resort with the apothecary; and the old veterinary surgeon seems to have followed the bad example. Aged people have informed the writer that they remember the time when, on a Sunday morning, a long shed was filled with agricultural horses standing in a row. These victims were all waiting to be bled. The veterinary surgeon's assistant used to take the fleam and to open a vein in the first animal's neck. Then he would proceed to the second, and thus, in turn, he would open the jugulars of the entire number. No account was taken of the quantity of blood lost—that flowed

forth till the last had been operated upon, when all the creatures stood simultaneously draining forth their lives.

The veterinary surgeon's assistant subsequently returned and pinned up the orifice of the first horse; then he went and performed that office for the succeeding animal. Thus, he a second time progressed down the row, pinning up as he proceeded; and the poor horses often tottered before he came. All this was done for a human fancy. Man thought the loss of blood at spring and autumn beneficial to all kinds of life. The writer has heard of old ladies who were very skilful in bleeding cats. Most cats, however, resist such an application of medical talent. Not so the horse; this animal submits itself patiently to the master's will. The creature seems to recognise that it has no right to exist, except by the permission of its owner. There is no living being which acknowledges so abject a dependence.

In return, it is made a sport of the idlest whims. Hence, horses, after bleeding, were all thought to be much benefited. They were expected to perform greater labour, and to continue in sounder health. In vain did the disease visit the stable more frequently; to no purpose was diminished capability displayed. The ungrateful bodies of the "plaguy beasts" were blamed, which would go wrong, after mortal science had expended its wealth upon them. Man never doubted his own wisdom—he never questioned his own conduct; and it is astonishing the quantity of prejudice which is from year to year perpetuated, for the want of a small amount of so cheap an article as mental inquiry!

The worst of the evil still remains to be told. The creatures, being bled, were esteemed so greatly benefited as to require no subsequent attention. Phlebitis was, consequently, in other days, a rather common affection. If neglected, the disease may terminate in death. In cases aggravated by mistaken measures, the disorder mounts to the brain, and occasions awful agonies. Taken early, and properly administered to, this disposition is easily arrested. It was formerly wrongly treated, and was traced to an erroneous origin. Phlebitis was, to the perfect satisfaction of learned judges seated on the bench, attributed to the surgeon's want of care. So serious an evil was imagined to be caused by culpable neglect, during a trivial operation. It was thought to have been provoked by the use of a foul instrument, or by

employing anything else to strike a fleam than a properly made blood-stick.

Experiments, however, which were instituted at the Royal Veterinary College, have proved, that no want of care, during the performance of bleeding, can provoke the disorder. Wretched horses, in that establishment, have been punctured with dirty, rusty, blunt, and jagged fleams: all manner of blood-sticks have been employed in every description of way. These have been struck violently and tapped in the gentlest fashion. Every possible sort of pinning up has been adopted; but the utmost endeavour of intentional perversion could not produce inflammation of the vein. There appears to be only one ascertained cause: that is, bleed, do not tie up the head; but turn the animal into a field, or present fodder to be eaten off the ground, and it will have phlebitis. The pendulous position of the head, and the motion of the jaws, alone seem capable of starting inflammation in the jugular vein. Bleeding is now almost an exploded operation, and should never be resorted to excepting in extreme cases, and then only under able veterinary advice. Of all the various cases that have been placed under the reviser's treatment during the past twenty years not one has ever been bled. Horses, which years ago would have been considered to be subjects of diseases demanding immediate blood-letting, have yielded to simple and recuperative treatment which loss of blood would have quickly destroyed.

There was formerly a grand diversity of opinion concerning a supposed eccentricity in the facts observed during phlebitis. If a horse was bled in the neck, and subsequently exhibited the disease, the brain became affected. If an animal was depleted from the fore leg, and displayed the disease, the heart became involved. In one case, the disorder proceeded from the centre of circulation; and in the other, it mounted directly towards the organ. A great many hypotheses were published to explain, or to account for, this imaginary peculiarity. Much nonsense was spoken, and more was written, to point out the real cause of an imaginary difference. Yet, calmly viewed, the seeming diversity appears to agree with the commonest law of nature. Phlebitis always closes the vessel at the seat of injury. The disease, therefore, in each case, is prevented from descending, and consequently

ascends above the orifice,—the only peculiarity being the relative situations of the structures involved.

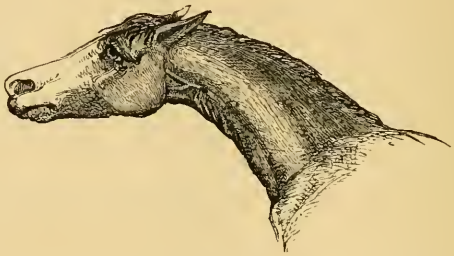
This affection is most common after blood has been taken from the neck. That seeming preference for a particular part may, however, be nothing more than a circumstance dependent upon the greater number of animals which have their jugulars opened. Were the brachial or the saphena veins punctured as frequently as the vessel which carries the blood from the brain, the apparent difference might appear in the opposite direction. However, from whichever vessel the depletion is effected, always tie the quadruped's head up and present no food. A stall is to be preferred to a loose box, as the confined space is more likely to prevent action. Motion is the source of all danger. This fact was aptly illustrated by an anecdote which used to be related by the late Mr. Liston, the eminent surgeon. In his lecture, that gentleman surprised his class by stating that the last person whom he bled had perished of phlebitis. Bleeding is the most simple operation in human surgery. Most surgeons leave this office to the apothecary; consequently it was rather a condescension in one who deservedly ranked so high in his profession to stoop to such an act. What, therefore, could possibly cause disease to follow the operation when performed by him who was accustomed to surgery upon its grandest scale.

The cause was soon explained. The person operated upon chanced to be a lunatic. This insane individual embraced the notion that the healing process was much favoured by constant motion; consequently he kept on flexing and extending his arm with all the violence which is natural to the demented. In vain was every effort made to persuade him from so mad an action. He clung with extraordinary pertinacity to his unwholesome theory. On the following day Mr. Liston was surprised to find his patient in bed, but still moving the arm in which disease had already declared itself. Measures were taken to keep the limb quiet, but it was found impossible to accomplish this in a satisfactory manner; and when Mr. Liston again called the patient was no more!

A vein being about to inflame, the earliest intimation of the fact is given by the separation of the lips to the wound, while through the opening drains a small quantity of a thin discharge.

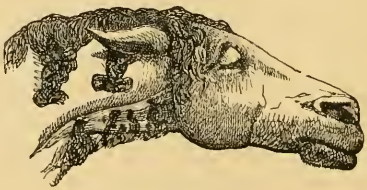
Should this warning excite no attention a round and hard swelling appears. That may be like a hazel nut in size, or it may resemble half a chestnut in magnitude; and this is soon followed by a swollen state of the vein superior to the orifice.

Then supervenes the second stage of the disorder. Unhealthy abscesses are formed along the course of the vein. As these mature they burst and send forth an unsightly and filthy liquid resembling thin contaminated pus. On examination, these tumours



A HORSE, WITH PHLEBITIS, OR INFLAMMATION OF THE WEN, IN THE SECOND STAGE.

are found to be united. They penetrate to the interior of the vessel, and are joined together by numerous sinuses. They literally constitute so many holes in the neck.



THE THIRD STAOE OF PHLEBITIS.

If no attention be now paid to the aggravated symptoms, worse speedily ensues. In the direction formerly indicated, the vessel feels hard under the skin. Supposing this sign to be neglected unhealthy pus issues in quantity from the wounds and soils the neck. This secretion is soon converted into a dark, impure, and fœtid discharge resembling decayed blood. The horse grows dull and stupid; the inflammation ultimately affects the brain, when

the suffering and the life are extinguished in the violent agonies of phrenitis.

The cure is easy, but everything depends upon the energy of him who undertakes it. When the lips of the wound which have been brought together by means of the twisted suture, "as the pin with tow wrapt round it is professionally termed," display a tendency to separate, and instead of being dry, appear moist, let no prejudice incline towards the ancient practice of fomenting and poulticing the injury. Without the loss of a moment in hesitation withdraw the pin; remove the substance which was twined round it, and apply a moderate-sized blister immediately over and around the puncture. Should the disease have ascended up the neck, still rub in a blister, only a proportionate amount of surface must then be acted upon. If the case be as bad as possible, and yet the animal is alive, still a blister is indicated.

THE TWISTED SUTURE.

A pin is first stuck through the lips of the wound; a portion of tow, thread, or hair, is then wrapt round the pin; and, to complete all, the point of the pin is lastly clipped off.

With the progress of the disease, a larger space should always be subjected to irritation, so as to cover every part the most active imagination could suppose to be involved. One blister, moreover, will not suffice; another and another and another must be employed, till every sign of disorder has vanished. They must, however, be applied in quicker succession, as the symptoms are more urgent; while a greater interval may be allowed between each when the affection is less serious. In the worst stage of phlebitis, another blister must be put over the part upon which the irritation of the first has not entirely ceased to act. In the second stage, the surface must have barely healed before another vesicatory is resorted to. During the primary symptom a single application frequently is sufficient, or, at most, two blisters generally suffice.

When the vessel assumes the corded state, a blister can affect no more than to check the progress of the disorder; no agency, however, which science has placed at the disposal of man, can restore the uses of the vein. The vessel is lost, and lost for ever. If a foul and black discharge issue from the openings, insert a director and enlarge the wounds, joining the holes by slitting up

the sinuses which unite them; but do not cut the entire extent of the hardened vessel, as in that case you may be deluged in blood. The employment of the knife and the free use of blisters constitute the chief means towards the cure of phlebitis. The sinuses must be laid open. The probe should then be most patiently employed, for every sinus *must* be slit up. This may be done at once when the hardness indicates the vessel to be closed above the part which the incision interferes with. To such an extent the knife may always be employed, while blisters after blisters are used, regardless of the severe wounds over which they are applied.

Much relief is afforded by the large and pendulous incision, through which the corruption freely finds an exit. Some horses however, from the pain occasioned by the raw and inflamed condition of the neck, will not allow the blister to be rubbed in after the ordinary fashion; especially when the irritation caused by the former application has not thoroughly subsided. In cases of this sort, do not employ the twitch, or resort to greater restraints. Exercise your reason. Regard the painful aspect of the wounds. Ask yourself how you should enjoy the hard hand of a groom, violently scrubbed over such a part, were the soreness upon your own body? Act upon the response. Procure a long-haired brush, such as pastry-cooks use to egg over their more delicate manufactures. Go then into the next stall. Speak kindly to a sick inferior that is at your mercy. Have the creature led forth, and, with the brush just described, smear the part with oil of cantharides or liquid blister. The extract of the Spanish fly does not occasion immediate agony, and the application of oil will cool or soothe the anger of the wounds.

With the jugular vein inflamed, the horse, during the period of treatment, should consume no solid food. Hay-tea, sloppy mashes, and well-made gruel should constitute its diet. However, the gruel must not be given in such quantities, or made so thick as the same substance would be allowed to a healthy horse. Gruel may not be very sustaining to the human being; but it is nothing more than the oat divested of the shell or refuse part. To the equine species such food, whether given dry or boiled in water, is highly stimulating; and as fever invariably accompanies inflammation, oats in any form evidently are contra-indicated. Should the animal, however, become ravenous, a portion of potatoes

having been first peeled, may be boiled to a smash. Some water and a sufficiency of pollard ought to be added, and the whole presented in such a state as requires no mastication, but in a condition that will allow the mixture to be drawn through the teeth. The same thing may be done with carrots and with turnips, only all mashed roots (except potatoes) should be passed through a colander and moistened with some of the water in which they are boiled.

Any animal, during treatment, should be placed in a loose box. No creature should be turned into the field. It is cheaper to pasture than to stable a horse; but the constant motion of the legs, as the field is traversed, is injurious to the punctured vein of the limbs; while the pendulous state of the head and the perpetual movement of the jaws are most prejudicial when venesection has been performed upon the neck. The stable is, in every point of view, the cheapest and the best residence. The head of the animal must be tied to the rack throughout the day; while, at night, the halter may be lengthened, permitting the creature to lie down; but the floor should be littered with tan, as straw might be eaten.

Let the horse remain thus for six weeks subsequent to the completion of a cure. Then give gentle exercise to the extent which it can be borne,—the quantity being small, and the pace very slow at first, but gradually augmented. This exercise should be maintained for three months. The animal afterwards may return to slow work; but if the neck is the place affected it must not wear a collar, or be harnessed to the shafts for the next six months. At the end of that time the horse may return to its customary employment; but, if ridden or driven, it is always well to bear in mind the late affliction, and to grant more than the usual time for the performance of the journey. At the expiration of the year, the smaller veins, having become enlarged, have adapted themselves to the loss which the circulation has sustained, and the horse may resume full work.

For the first year, gruel, crushed and scalded oats, with two bundles of cut grass per day, should constitute the diet. The manger should be heightened, and the halter be so arranged as to prevent the head being much lowered. Do all in your power to render useless violent mastication; and, as the horse never chews

when the operation is unnecessary, it will obviously second your endeavours.

At the expiration of twelve months, the animal which has lost a vein may be sold, and, *in law*, has been accounted sound. Such a blemish, however, is far from a recommendation; in this case, law and common sense may be at variance. The reader, therefore, is advised never to purchase a nag in such a condition without insisting upon a special warranty, in which it is provided that the animal is to be taken back should the loss of a vessel be productive of any evil effects within the space of one twelvemonth.

BROKEN KNEES.

These accidents affect the exterior of the central joint of the fore legs. They may be very trivial or very serious; they may simply ruffle the hair or scratch the cuticle, covering the integument: the same cause may, however, remove the hair and lay bare the cutis. Moreover, the wound is often aggravated by the nature of the road on which the animal is travelling. A fall, upon a very rough surface, might even destroy a portion of the skin, and deprive more or less of the cellular tissue of vitality.

BROKEN KNEES, OF VARIOUS DEGREES OF INTENSITY.

The hair ruffled, and the cuticle scratched. | The hair removed, and the true skin exposed. | The skin destroyed, and the cellular tissue injured.

Accompanying such accidents, there generally is some amount of contusion. When it falls, the horse is in motion, and the impetus lends violence to the descent. Probably, the animal is being ridden when it comes to the ground. The weight of the blow is not only, then, proportioned to the heavy body of the horse, and the rate at which it is progressing, but its effect is augmented by the load upon its back. These considerations

render "broken knees" the proper dread of every horse proprietor. An animal may stumble and come down which, prior to the mishap, would have been sold cheap for several hundreds. It may be raised from the ground with almost all its worth demolished. The nature of the hurt is not, however, always shown at first. The chief danger in broken knees lies in the accompanying contusion. The horse, which rises without a hair ruffled but which fell with violence, is always, with informed persons, a cause of considerable anxiety. Contusion is to be more dreaded in its consequences than is the largest wound, when devoid of anything approaching to a bruise.

The reason why contusion is thus gravely regarded is because, when that occurs in severity, the vitality of all the coverings to the knee is destroyed, and in very bad cases even the bones are materially injured. All dead parts must be cast from a living body; and no man can predicate how deep may be the injury, or how important may be the structures which shall be opened when the slough takes place.

Proprietors of horses, thus injured, are commonly very earnest in their solicitations for a professional opinion as to the extent and probable consequences of the accident. No certain judgment can, however, be pronounced, nor should one be given. Any surgical calculation, notwithstanding it may be most prudently qualified, is apt to be misconstrued by the anxiety of distress. The most guarded hint, at a probability of recovery, is too likely to be seized upon as a positive guarantee of perfect restoration; and the possible evils which may have been alluded to, confusion causes the individual not to remember. Therefore, silence is wisdom in these cases, however slight the broken knee may appear in the first instance.

Broken knees are principally caused by the imprudence of him in whom authority is invested. Certain people imagine the public admires the man who chastises a horse. Such a person slashes away for every trivial error. Every imaginary fault is punished with the whip, which too often curls around parts that should be respected. The animal, pained and frightened, thinks only of the slasher behind it, and entirely disregards the path upon which its eyes should be directed. The flogging is incessant, and the horse's pace is incautiously fast. An impediment is encountered; the

animal trips; it is cast to the ground with violence, while the man is probably rendered fitter for a hospital than for the continuance of his travels.

Other riders and drivers always visit with severity the slightest indication of weak limbs. A sudden drop, or a false step, is to such people the signal for the reins to be jagged, the voice to be raised, and the whip to be freely exercised upon all parts of the animal's body,—but mostly about the face and ears. The man likes to behold the poor creature shake its head, and loves to imagine he is then teaching the terrified quadruped to be careful. Equine pupils, no more than human scholars, are to be tutored by barbarity, which may slay the reason long before it can instruct the mind. Composure is imperative to the acquirement of any knowledge. Thrashing calls forth terror, and alarm is synonymous with confusion of mind. The horse is susceptible of a fear which humanity, happily, finds it difficult to conceive; and how far such a creature is calculated to be educated by cruelty, the intelligent reader is left to infer.

Could the animal argue, it might plead that the weakness objected to was caused by exertion made in man's service; that the stumbling gait was consequent upon no negligence on its part; that it afforded the beaten wretch no pleasure to have the knees broken; that if the quadruped might profess a choice, it would prefer not falling down, etc., etc. If such pleas were properly considered, they perhaps might still the turbulence of the punisher.

The great majority of these injuries are consequent upon the prejudice or thoughtlessness of mankind. Popular admiration is, in this country, much in favour of a good crest. Every animal, no matter how nature may have formed the neck, must carry a good head. The rider, therefore, drags upon the bridle, while the form of nearly every gentleman's harness horse is distorted by the bearing rein. The constraint, thus enforced, not only obliges additional muscular action, but it disqualifies the animal to see the ground. In England there should be no objection to a blind horse, since such of the species as have eyes are, by the prejudices of society, seldom permitted to use them. The horse, being urged on when virtually blindfolded, must of necessity stumble, upon any unusual impediment being encountered. Such an accident

shows no fault in the quadruped; but the man is truly responsible for those consequences which his folly has induced.

When a horse stumbles, never raise your voice—the creature dreads its master's chiding; never jag the reins—the mouth of the horse is far more sensitive than the human lips; never use the lash—the horse is so timid, the slightest correction overpowers its reasoning faculties. Speak to the creature; reassure the palpitating frame; seek to restore those perceptions which will form the best guard against any repetition of the faulty action. When the legs are weak the greater should be the care of him who holds the reins. No cruelty can restore the lost tonicity of the limbs; therefore, all slashing is utterly thrown away. If the reader regard his own safety let him not, when riding, hold the head up, or, when driving, sanction the employment of a bearing rein. No inhumanity can convert an animal with an ewe neck into the creature with a naturally lofty crest. The disguise of such a defect, as a head badly placed on the neck, is an impossibility. Therefore, if you are desirous of a well carried head, think of it when making the purchase. Pay something more, and any kind of quadruped is obtainable; but be above the meanness which purchases for a low figure, and then endeavours to palm off its cheap article as a jewel procured at the highest price.

When a horse has been down, never judge of the injury by first appearance. While the animal stands in the yard, order the groom to fetch a pail, with milk-warm water and a large sponge. With these he is to clean the knees—not after the usual coarse and filthy fashion now universal; not by first sopping the part and then squeezing the soiled sponge into the pail, whence more fluid is to be abstracted, for the dabbing and smearing a wound simply irritates it, and the dirt, having all entered into the pail, renders the fluid unsuited for after cleanly purposes.

THE PROPER WAY TO WASH A BROKEN KNEE.

To perform the office properly, the knee should not be touched. The sponge should be saturated, then squeezed dry above the seat of injury. The water thus flows in a full stream over the part, and by the force of gravity carries away any loose dirt that may be

upon the surface. Sopping, dabbing, wiping, and smearing occasion pain, and can remove nothing which may have entered the skin, and which is protected from the action of the sponge by a covering of hair. Whereas by the plan recommended the dirt is removed, the part is not debilitated, neither is its natural energy destroyed. The last drop of water, moreover, is as clean as was the first; and the animal is not irritated immediately prior to a surgical examination.

If the skin has been cut through, the edges of such wound should be brought together with sutures; for this purpose a strong needle must be used, as the skin at this part is thick, and the after treatment will be similar to that for other wounds of the knee about to be described. Other carpal injuries occur where sutures could not be introduced.

Should the skin be lacerated, the probe must be employed. Such injuries are very deceptive. They may be much more extensive than the size of the wound would indicate. The probe, being of metal, ought not to be thrust violently against every exposed part. This kind of proceeding can effect no good. The probe should be held lightly between the thumb and fore-finger; no pressure should be made upon it—the instrument ought rather to fall of its own gravity than be forced into the flesh. A thin piece of wire can be readily driven into soft structures; but where an actual division exists, no opposition necessitating force will be encountered.

Broken knees always occur when the horse is in motion. The onward impulse is not by the fall immediately destroyed, but after the horse is down there always exists an impetus, which has a tendency to propel the body forward. Should the skin of the knees be divided by the fall, the after-force, obviously, cannot affect the upper line of such division; but the lower edge of the skin will present an acute obstacle to the roughened ground, and will, by the grating of the body, in all probability be rent from its attachments. When the animal rises, the action and the elasticity natural to the integument will occasion the torn portion of the skin, which has been driven backwards, to once more assume its original position. By this means, a kind of bag or purse is formed upon the knee. Grit, mud, and all kinds of impurities may be retained and concealed within this pouch. These will be disposed to irritate the

structure with which they are in contact; suppuration is certain to be established, and sad consequences have followed such sacs not being early detected.

Such a cavity having been discovered, the next object is to ascertain its dimensions. This is done by gradually moving the probe along its sides. Should it be small, it will be sufficient that a hole be made through its most depending portion with a sharp seton needle. If it be large, the needle should be armed with a piece of tape knotted at one end. The sac being punctured, the needle is to be drawn through the opening, the tape being left in the cavity, and a seton is thus formed. The seton should be knotted at the other end, and moved its entire length every night and morning. It will prevent all premature attempts to heal, will stimulate the soft parts to suppuration, and will remove the dirt, as the tape affords a guide to the secretion. When inserting a seton into the knee always use a large curved needle. The size of the instruments should never be regulated by any foreign standard, but should always be proportioned to the magnitude of the patient and the intention of the operator.

PROBING THE SAC OF A BROKEN KNEE.

A SETON BEING INSERTED THROUGH THE SAC OF THE KNEE.

Three days subsequent to the full establishment of suppuration cut off one of the knots, and, laying hold of the other knot, withdraw the seton. Its advantages by this time are gained, and its longer stay, by hardening the opening through which it passed, would occasion lasting blemish.

The reason of its insertion is thus explained. Where foreign matter is confined, no wound will heal; the orifice may close, but soon after abscess forms. This process is repeated until the suffer-

ing is long protracted. Danger is generally proportioned to the duration of the evil, where wounds not of a mortal character are concerned. By the agency of the seton, the foreign matter is removed, and the healing process thereby considerably expedited. After the above plan, all blemish may be lost by the expiration of the third month; and the once injured knee, restored to its uses, rendered fine as any other part of the body.

Everything being accomplished as it is here directed no attempt must, in the first instance, be made to poke out any particle of dirt which the probe may touch. The bagging skin being divided by the seton having been established in the sac, no further thought need, for the present, be given to a common but most vexatious attendant upon the customary treatment for broken knees.

The animal should be returned to its usual stall, and have the head "racked up." Some cold water should then be procured, with every quart of which two ounces of tincture of arnica should be blended. A portion of this fluid ought, with a clean sponge of moderate size, to be poured into a saucer; the groom must have strict orders to take the sponge, and, having saturated it with the fluid, to squeeze it quite dry, allowing the liquor to run over the injured knee. This must be applied thrice daily for one week (after the manner previously illustrated, as washing the wound).

If, at the expiration of the period named, no swelling appear and suppuration seem to be thoroughly established by means of the seton, the halter may be released to a great extent, a cradle being merely fixed upon the horse's neck; the animal will thereby be permitted to lie down and to enjoy its natural rest.

But should the joint be much enlarged, should the part have become acutely sensitive, while the horse resolutely refuses to bear any weight upon the injured limb—then withdraw the seton, give the animal two pots of stout per day, and all the oats mingled with old beans which it will consume. Untie the head and place the horse in slings; employ the arnica lotion night and day, until the slough is thrown off, which having taken place, change the liquid application for the solution of chloride of zinc—one scruple to the pint of water—and continue to employ this last lotion after precisely the same manner as has been previously directed.

Probabilities, however remote they may seem to be, are here endeavoured to be anticipated; although the author's experience cannot recall a single case where the arnica lotion has been used with proper assiduity, and any but the most happy results have followed. When an animal has fallen violently to the earth, and has been, in the first instance, shown to the writer with much tumefaction and excessive tenderness, a slough has in exceptional cases followed; but never has the enlargement or the sensitiveness increased under the proper use of the arnica lotion. The slough, moreover, in such instances has been superficial, only entailing loss of hair, and never occasioning open joint.

All horses are exposed to these accidents, for the reasons already stated. Whenever such misfortunes occur, employ the arnica lotion. Should the skin be divided, still use the arnica lotion until copious suppuration is established. The secretion once seen, resort to the lotion—formed of chloride of zinc and water, one grain to the ounce—which operates most marvellously upon all suppurating wounds.

No absolute period can be stated, which a case of broken knees, when severe, ought to occupy. The danger, however, is

AN ORGANISED KNEE, ENSUING AFTER A LONG COURSE OF THE ORDINARY TREATMENT.

THE APPEARANCE OF THE KNEE SUBSEQUENT TO THE HEALING OF THE WORST CASE THE AUTHOR EVER HAD UNDER HIS CARE.

generally past by the expiration of a week, and the cure commonly entails loss of services for a couple of months.

When adopting the foregoing mode of treatment, no bandages are to be employed. Such wrappers only augment the heat inherent in every species of inflammation. They dam up the pus, and speedily become foul and offensive rags; cleanliness is one of the primary requisites towards good surgery.

No caustics of any kind are imperative, or even necessary.

The two lotions, if used with proper zeal, will accomplish all that can be desired. The arnica lotion should, however, be in all cases applied night and day, during the early stage; the chloride of zinc lotion ought to be employed only during the time man is usually out of bed.

The wound, in ordinary cases, should not be washed or touched. Should proud flesh start up, such is the positive proof of the negligence of the groom, whose duty it was to apply the chloride of zinc lotion.

If the mode of treatment here laid down be strictly pursued, a satisfactory and a speedy cure may be insured. To enforce the value of the measures recommended, the portraits of two knees, which were subjected to the opposite processes, have been presented. Both were copied from living subjects in the sixth week after the misfortune had occurred.

OPEN SYNOVIAL CAVITIES.

The primary cause of these fearful accidents is the pride of mankind. Gentility is always striving to impose upon credulity; it loves to be mistaken for something better than it really is. After all, this vice of society is nothing more than the child's game of "Lords and Ladies," played by grown-up persons. A horse having a naturally defective neck is obtained; no barbarity is too abhorrent to repress the hope of making people believe the steed thus deformed is a creature of extremest value. The animal, if ridden, has the chin pulled in close to the neck; if driven, the free carriage of the body is prevented by the cruel bearing-rein. The horse progresses in agony, while gentility sits smiling at the result of its artifice. The horse cannot see the ground before it, because of the constraint imposed upon the head; it cannot fix attention upon its duty, because of the agony with which the cunning of gentility inflicts upon the lips. The pace is always rapid; the action is high, as in the case of blindness; and the animal generally comes to earth with violence. The skin upon the knees is divided, and the structures beneath are penetrated. One or more synovial sheaths are opened, while the cavities formed by the junction of the separate bones may be lacerated.

Sheath or joint may not be immediately opened by the fall, but either may have their integrity destroyed, through the slough induced by the contusion consequent upon a broken knee. Moreover, various accidents will occasionally happen,—misfortune is of infinite variety. The synovial bursæ, sheaths, or cavities of the hind legs, are occasionally punctured by the quadruped kicking violently while in harness. The capsule, embracing the tendon of the flexor brachii, upon the point of the shoulder has been opened by the animal drawing a vehicle being run into; or by the horse running away and coming in contact with some obstacle. Any synovial cavity within the body may be penetrated by an unfortunate combination of circumstances; or by the unbridled passion of the groom, who may have a pitchfork near at hand. So also they have been cut into by the arrogance of unskilful operators. However, it matters not how the misfortune may arise, the mode of treatment and the manner of cure is in all such cases exactly the same.

Neither, as regards the primary effect, is it of subsequent importance, whether air be admitted into an opened bursa or sac, a synovial sheath, or the interior of a joint. All of these structures are formed into bladders or closed cavities. They all contain a similar secretion, which is a transparent albuminous fluid, resembling white of egg. They all are of one use, or all serve to facilitate motion. The bursa is the smallest; the synovial sheath is the next in magnitude; and joints may be much the largest. The secondary effects are proportioned to their size; but, in the first instance, much constitutional disturbance will attend the opening of each.

These structures are not formed to endure the presence of atmosphere; if air be admitted, a short time after each displays inflammation. This creates symptoms of irritability, and air will enter before we see the wound. The secondary effect is, however, most to be dreaded. Bursa are small bladders, or closed sacs, distributed over the body, and located wherever the natural motions possibly might originate friction. Sheaths always embrace tendons, being essentially closed sacs. The secondary effects of tendonous sheaths are so much the more to be dreaded than those attending a punctured bursa, because the last generally lie loosely between highly organised parts; whereas, a sheath

is partly fixed upon a tendon, and tendon, being lowly organised, is more difficult to cure when it is diseased. However, joints are much worse than the preceding two, because in these the synovial membrane is partly spread over the cartilage, which lies upon the articular surfaces of bones. Now, cartilage is the most lowly organised substance in the entire body. When disease fixes upon it, the morbid condition is so slow, so irritating, and so difficult to eradicate, that science almost despairs of the issue.

The results indicated show that every effort should be made to ward off the secondary effect. Therefore, when an accident of this nature occurs, proceed with the utmost gentleness. Having procured a large sponge and a pail of milk-warm water, saturate the sponge and squeeze it dry above the injury. Do not touch the sore, but allow the fluid as it gravitates to wash off all or any foreign matter. With regard to the wound, dirt seldom enters that. When it does, the suppuration which must ensue upon the accident will more effectually remove it than could hogsheads of water, however unfeelingly it might be employed.

The part having been rendered clean, the wound is to be attentively observed. When nothing but blood or serum, or thin discoloured fluid can be seen, this argues the more important structures are entire. Should there be among, and yet distinct from, those discharges, a transparent glary liquid flowing forth, such is absolute proof some synovial membrane has been severed. The size of the current and the abundance of the secretion are also evidences not to be despised. Probabilities may be inferred from these circumstances. If the amount of synovia be small, there is hope that a bursa only has been interfered with; when the amount is large, it demonstrates that either a sheath is punctured or the joint itself may have been opened. Synovial cavities, between bones, may be larger and are much more active than the sheaths of tendons; therefore, the magnitude of the current should be observed; although, when the integrity of many parts has been destroyed, little absolute dependence will be placed upon the comparative quantity of the synovial secretion.

Anatomy is, under the circumstances, a fair guide. Where numerous structures are involved, a well-grounded learning is requisite for accurate judgment; but, as regards the knee of the horse, the spot whence the synovial discharge issues is of all

importance. The incision must either be very deep and gaping, all subjacent structures being divided before the knee-joint can be exposed, or else the wound must affect a very circumscribed place. Beneath will be seen anatomical engravings of the horse's knee. The reader will remark how closely it is laced about with tendon. Each of the tendons, when crossing the joint, is embraced in a synovial sheath. From such information, it will instantly be seen how far more likely a sheath is to be lacerated than the joint is to be punctured.

The single point where the joint could be entered, without severing tendon, lies rather on one side than directly in the centre. The vulnerable spot is therefore not exposed to the full force of the blow. To lay bare the joint by an ordinary fall, several parts must be divided. Rarely is an accident witnessed of so fearful an extent.

No. 1.

THE TENDONS WHICH CROSS THE OUTSIDE OF THE KNEE-JOINT.

Explanation of No. 1.

1. The Extensor Metacarpi Tendon.
2. The Extensor Metacarpi Obliquus Tendon.
3. The Extensor Pedis Tendon.
4. 5. 7. Connecting and restraining Bands between the Tendons.
6. The Extensor Suffraginis Tendon.
8. The Flexor Metacarpi Externus Tendon
9. The Back Sinews.

No. 2.

THE TENDONS WHICH CROSS THE INSIDE OF THE KNEE-JOINT.

Explanation of No. 2.

1. The Extensor Metacarpi Tendon.
2. The Extensor Metacarpi Obliquus Tendon.
3. The Flexor Metacarpi Internus Tendon.
4. The Back Sinews.

The letter a denotes the only spot where the knee-joint could probably be opened by a fall without lacerating a synovial sheath or injuring a tendon.

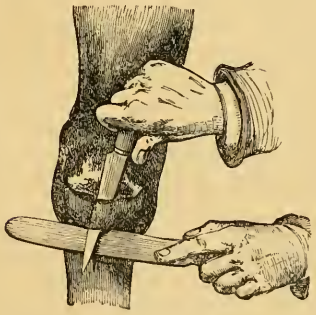
Generally, that which is spoken of as open joint proves to be no more than punctured sheath: the presence of synovia being commonly accepted as the proof. But when the joint is really laid open, the immense flow of synovia—so many sheaths being severed—should at once prove the fact.

The probe must next be used. In the first instance, it should be employed to ascertain whether the fall has left any purse or

sac at the inferior part of the joint. All which was enforced respecting the use of a metallic wire to a raw wound must here be observed. The probe had better be altogether discarded than employed with the smallest approach to rudeness.

PROBING BROKEN KNEE.

The suspected sac having been discovered, a large spatula is placed below the knee. A knife with a keen point, but with the edge only sharpened for one-third of its length, is to be used. Upon the cutting point of the knife a piece of bees'-wax is firmly moulded. The wax answers the purpose of a temporary probe; the blade, thus guarded, is cautiously inserted beneath the loose flap of skin. When the bottom of the pouch is reached, a certain amount of resistance will be encountered; through this the knife is driven. The force cuts in twain the wax, and pushes through the integument the blade which the spatula guides from the leg. This operation should be performed quickly. The hand should simply be carried downward, and then brought upward, when all is concluded; care, however, being taken that the withdrawal of the knife does not injure any part save those it was designed to cut.



THE MANNER OF OPENING THE DIRT SAC, IN CASE ONE SHOULD BE PRESENT WITH OPEN JOINT.

Should the horse be nervous it is advisable to blindfold the animal, and order the groom to hold up the sound leg; the creature can then only rear. When thus disabled, that movement is rendered difficult, and it is proportionably slow. The operation, if properly performed, should be over before action can be prepared for; and by the knife a considerable incision is made in the bottom of the sac, through which all grit or dirt can, with the pus, readily pass.

The examination concludes with a second resort to the probe. The instrument is, in surgery, of great use; but, as it is commonly employed, reason may doubt whether injured life has been much

benefited by its invention. It generally is roked and poked about as though the person holding it was determined, at all hazards, to ascertain the length, breadth, and every irregularity of the wound he is asked to cure; much harm is thereby done. Delicate attachments which, if not interfered with, might induce speedy reunion are thus broken down, and the injury aggravated; while the operator thinks he ought to know all about the lesion he is to treat, and supposes that he can possibly do no harm with an instrument which the best schools order to be employed.

A good surgeon has no curiosity to gratify; all he desires to know is so much as will enable him to benefit the patient placed under his care. Therefore, never abuse the probe in cases of open synovial cavities. Imagine the distance the bones are from the surface, and, if the probe can enter a very little beyond that distance, such a fact demonstrates the cavity to be exposed. When a horse is before you with synovia running from a wound upon the knee, have the leg slightly flexed: look for the most free space, and into that insert the probe. The bones of the knee-joint are directly under the skin, and when no opposition is encountered for three-quarters of an inch, be certain the joint is exposed.

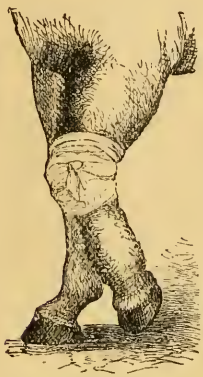
PROBING AN OPEN JOINT.

Most of the cases narrated as opened joints were simply punctures into synovial sheaths; as such, they were sufficiently serious, but not of so important a character as is assumed for them. Synovia is placed between the ends of bones, its use being to prevent the friction which otherwise would be occasioned by the movement of one hard body upon another. Being confined in a circumscribed sac and incapable of much compression, the liquid performs all the uses which could appertain to the most solid substance. When the fluid which, from its thick appearance and unctuous feel, was formerly termed "*joint oil*," has escaped, the bones grate against each other; inflammation ensues; all neighbouring parts sympathise, and the constitution suffers from intense irritation.

Something of this kind happens when a synovial sheath is punctured. The tendon comes in contact with its investing synovial membrane; but there are reasons why that circumstance

is not so serious as when the lubricating fluid is released from the cavity of a joint. Tendons support no weight, and their motion is with the sick almost optional. The bones are the pillars on which the body rests. Even while the frame is prostrated a certain degree of pressure is upon them. For that reason, and also because tendon is more highly organised than cartilage, the first mentioned substance is endowed with the greater renovating energy. An open joint is consequently far more serious than a punctured sheath.

Notwithstanding the serious nature of these accidents, when wrongly treated, few injuries yield more kindly to proper measures than do open joint. However, should the ordinary treatment of caustics and bandages be adopted, the entire limb, before the expiration of a week, will be hot, hard, and tense. The health of the animal will be seriously affected by the continued irritation, and the body will rapidly become emaciated. The foot of the limb will, with evident difficulty, be held from the ground. Should not death interpose (the animal, being unable to lie down, and the entire weight being cast upon the sound limb), the foot attached to the healthy member frequently becomes affected with the worst form of incurable laminitis.



THE INJURED LEG—HARD, HOT, TENSE, AND SWOLLEN; ALL RESULTING FROM THE INJUDICIOUS EMPLOYMENT OF BANDAGES.

Even should such a misfortune as laminitis not occur, the

OSSEOUS STRUCTURE HAS BEEN THROWN OUT, CAUSING ENLARGED KNEE AND PERMANENT BLEMISH; THE RESULTS OF USING BANDAGES.

EXTENSIVE LOSS OF HAIR, GENERAL ENLARGEMENT OF THE KNEE AND ORGANISED THICKENING OF THE SCAR, RESULTING FROM THE USE OF BANDAGES.

after deformity and blemish renders the horse almost worthless. The bones sympathise in the general disease, and a large osseous

deposit is engendered to mark the surgical inaptitude. When bony growth does not follow, the parts lying immediately over the knee thicken; the skin sloughs, and the integument never being restored, a full knee with a lasting blemish is the consequence.

OPEN SYNOVIAL JOINTS.

The more favourable terminations are never to be anticipated, when the barbarity of bandages and the cruelty of caustics are sanctioned. The horse which recovers from such treatment is, by an enlarged and blemished limb, rendered an object painful to contemplate, and is entirely unsuited to any gentleman's uses; while the life of the creature is rendered burthensome. There is nothing in the proper treatment which a child might not safely apply. The measures create no pain and require no force; they rather soothe than irritate, and therefore are always submitted to with complacency.

OPEN JOINT, ENSUING UPON BROKEN KNEE, AND SOLELY CAUSED BY THE ABUSE OF BANDAGES.

The animal, when first brought in, never displays symptoms indicating the full extent of its injury. The part which has been wounded generally presents something like the aspect represented in the annexed engraving. Commonly, there is an evident flow of synovia; but the most careful examination can seldom detect positive evidence of an open joint.

THE GENERAL APPEARANCE OF AN OPEN JOINT WHEN FIRST SUBMITTED TO THE NOTICE OF THE SURGEON.

The full extent of the evil cannot be known before the slough takes place. This is certain to follow upon the customary bleeding, physicking, low diet, bandages, and caustics being employed. As recovery is wished for, all such aggravations must be rejected. Proceed in the first instance as has been directed for broken knee; and, these things being done, give the following drink:—

Sulphuric ether, . . .	One ounce.
Laudanum, ...	One ounce.
Water, ...	Half-a-pint.

Give this without noise or violence.

Treat the frightened animal with even more gentleness and patience than would be bestowed upon a sick child. A harsh word may now, when the system is shaken and every nerve unstrung, do that harm which no medicine can repair.

Having given the drink, look at the animal and take the pulse. Should the appearance denote inward comfort, and should the pulse be natural, give no more drinks; but if the eye is in constant motion, if the horse breathes hard and starts at sounds, if the head is held high and the ears are active, repeat the ethereal draught, and continue repeating it every hour until the foregoing symptoms abate.

The object of the medicine being gained, have the horse quietly led into a loose box, a favourite neighbour may be placed near the patient. But all other quadrupeds which might disturb the sick animal should be taken out of the building. A good clean bed should be shaken down, and the diet must be suited to the symptoms. If the pulse is at all low, no hay should be allowed till it amends; should the arterial beat denote oppression, a rather large proportion of beans may be blended with the oats. If the breathing is short, the countenance unhappy, and the eye sleepy, while a very quick and feeble pulse only is to be detected, give four of the ethereal drinks in the twenty-four hours.

THE MANNER IN WHICH LOTION SHOULD BE APPLIED TO AN OPEN JOINT.

The animal being in its box, then apply the lotion, composed of tincture of arnica, two ounces; water, one quart. Use this by means of a sponge and saucer. Pour some of the liquor into the receptacle. Saturate the sponge and squeeze the fluid upon the leg, but above the injured knee. Do this after the manner which is illustrated, as the proper mode of washing the wounded part.

Continue with the arnica lotion night and day, for half a week. No periods can be named for applying the sponge, as inflammation and, therefore, the drying powers vary in different individuals; but the knee should be always wet. This should be attended to for the first three days and a-half, during which the halter should be tied to the rack. At the end of that time turn

the horse very gently round. Remember the condition of the limb, and allow time for the performance of an action, which is always an effort to the most agile of the equine species.

The animal being with his face to the door, prepare to place it in slings. Do not be in a hurry, but by degrees introduce webbing under the patient's belly, adjust the pulleys, and fix the straps upon the chest and hind quarters.

When all is fixed, leave a pail of water suspended within easy reach, and put an elevated trough, charged with favourite provender, in front of the horse. Let it be watched till a week from the date of the injury has expired, and never left during that period, even for an instant. If any restlessness is exhibited, the attendant should approach and caress the creature. Quadrupeds —though none comprehend the precise meaning of the language— love to be praised. The hand, fondly applied to the skin, and the human voice modulated by kindness, seem to convey a purport to animals, which they will suffer pain to deserve. The writer lately had a favourite dog, whose aversion was dry bread. It would hold the detested morsel in its mouth for hours, looking most uncomfortable, but making no attempt at mastication. Yet, upon praise being lavished, the eye would brighten, and, rather than prove unworthy of so much commendation, the hardest and stalest crust would be chewed and swallowed.

Watching is necessary, because many horses, when thus imprisoned, being left alone, grow terrified, and injure themselves, by struggling their bodies out of the slings. The presence of any human being assures the timidity and checks the active imagination of a solitary animal. The author well knows that the learning of the present time denies imagination to animals. Shying is only the creature imagining something which is not actually before it. What are dreams but positive evidences of imagination? All people have heard the suppressed bark, and seen the excited limbs of the dog, as it slept upon the hearthrug. How many grooms have been surprised, upon their earliest visit, to see the stable knocked to pieces, and the horse prostrated amidst the ruin it has created? How is this to be explained if imagination be not present in the animal? This is the author's interpretation of the mystery. Dreams are active in proportion to the immaturity of the reason. Children often wake up in tears, and continue scream-

ing in terror for long periods if unattended to. The horse starts out of a fearful vision; darkness is about it; the fear augments; the animal begins kicking; the sound made by its own feet increases the creature's alarm; it lashes out frequently, until it has pounded part of its dwelling into atoms, and disabled itself to that degree which makes the highest punishment the greatest mercy.

A high trough is required to guard against the effects of that itching which attends the healing process, and provokes the animal to strike its knees. This it would do against the manger were its head in the customary position. Were a wall before it the knees might still be laid open; but with a high trough nothing is within the reach of its injured joint. Even supposing one of the slender

A HORSE IN SLINGS FOR OPEN JOINT.

supports, by the cunning of excitement to be struck, the substance should be too light to offer any dangerous resistance, the blow being far more likely to overturn the machine than to lacerate the limb.

When the quadruped has remained sufficient time in the slings to have become familiar with them, pull up the cloth, so that it may slightly touch, but not press against, the belly. Then well secure it, and leave the animal to rest its wearied limbs, or not, as

it pleases. Its suffering joints will soon teach the horse to bear the entire weight upon such a support, and to sleep comfortably in the contrivance. With a few, and only a few examples, living in slings has induced such confirmed constipation, as necessitated a daily resort to bran mashes. Most horses, however, speedily accept and grow fat, enjoying the relief thus afforded. Only one caution need be given; look well to the tackle. The horse is very heavy, and should a single fastening prove insecure the result might convert a healing wound into a hopeless injury.

With the employment of slings, change the lotion for one composed of chloride of zinc, one scruple; water, one pint; this need be applied only during the day. It is too weak to occasion pain, and should be used with the saucer and sponge, after the manner of washing a broken knee or open joint, which has been previously illustrated. The strength, nevertheless, is sufficient to coagulate the albumen of the synovia. Thus, it forms a species of natural bandage, which excludes the air, while, at the same time, it stimulates the flesh, and causes that to heal under the protection of its own albuminous secretion.

The coagulated albumen frequently accumulates in front of the knee. The author has seen it attached to the part quite of the size and very near to the form of the largest apple. It must on no account be touched, however large it may grow, or however insecure it may appear. Respect it, and it will fall off when its service is accomplished. The cure is nearly completed when the white ball falls. Shortly after the wounds being closed, and pressure made with the fingers—not with the thumb—can be endured, the slings may be removed, though the healing should be further confirmed before the horse is allowed to stand opposite to any substance against which it may strike what recently has been a fearful open joint.

THE ALBUMINOUS BALL, WHICH FORMS IN FRONT OF AN OPEN JOINT WHEN TREATED WITH A SOLUTION OF CHLORIDE OF ZINC.

WOUNDS.

When a horse pauses, always endeavour to ascertain the motive; the reason may be groundless. By gentleness convince the creature

that its fears are without foundation, and you earn a supremacy as well as win a gratitude which will always be cheerfully acknowledged. Never employ the whip to correct "the obstinacy of the brute." The horse is naturally very fearful; were it not so, man would never have obtained that mastery which is imperative for domestication. Elderly gentlemen should never thrust their heads out of carriage windows and shout to the driver to "go on." Such implied chiding may urge the coachman to display severity, and the horse is dangerous when alarmed. So long as the animal continues calm, the superiority of man is submitted to; but once excite the terror of the quadruped, and all earthly restraint is powerless. Dread assumes the form of the wildest fury, and the horse tears onward, insensible to mortal punishment and blind to every danger.

It is in this manner the most terrible wounds are produced. Such injuries, in surgical language, are defined to be "solutions of continuity," or "separations of the skin and softs parts underneath." Neither of these definitions, however, include a bruise or a contused wound. Therefore, for the present purpose, a wound will be interpreted—an injury inflicted by external violence.

A LACERATED WOUND may be too trivial to attract the surgeon's notice—as, a scratch. It may also be a very serious affair—as when a cart-wheel runs against a horse's thigh, tearing the flesh asunder. Laceration is generally accompanied by contusion; though contusion forms no necessary part of a lacerated wound. When such injuries are inflicted, they are mostly followed by little hæmorrhage; yet it is far from unusual for an animal thus hurt to perish. Shock to the system is the most serious of the primary effects. Beyond that, the immediate consequence appears to be insignificant. Little blood is lost, for the vessels are stimulated by the violence which rends these tubes and the soft structures asunder. Stimulation causes the torn mouths of the arteries and veins to close or to retract. The ragged coats of the vessels, the loose fibres of the flesh and the jagged cellular tissue likewise fall over the orifices, and help to stay the flow of the vital current.

DIAGRAM OF A SEVERE LACERATED WOUND.

The dangers attending lacerated wounds spring, in the first instance, from collapse. This possibility being overcome, the immediate peril has been surmounted; all injuries of this nature are commonly attended, however, with more or less contusion. The force required to tear open a portion of the body will, of necessity, bruise or kill some part of the flesh. Any animal substance when deprived of vitality must be cast off by a living body; a slough must follow. Now, that process is attended with hazard in proportion as it is tardily accomplished. The period of its occurrence is always one of anxiety; for, when this process takes place, the stimulation that originally caused the vessels to retract, no longer exists. All mechanical opposition to hæmorrhage is, with the loss of the dead matter, generally removed. Everything, therefore, depends upon the fibrinous deposit; a sort of glutinous material secreted by the body, which is, commonly, largely poured forth when any slough by natural and speedy action is effected. Should the frame be so far debilitated as to prevent all secretion of fibrine, the most frightful bleeding must ensue.

The horse which has not recovered from the original injury will then sink under the terrible depletion. Therefore it is impossible to form any opinion of the injurious effects, or of the consequences likely to follow a lacerated wound before some time has elapsed.

An INCISED WOUND implies a division more or less deep of the soft parts. This form of injury produces less shock to the system, and generally heals more quickly than any other. The principal danger is encountered at the moment when the wound is inflicted; vessels may be sundered, and they are cut in twain with the least possible irritation to the parts within which they are situated. The veins and arteries, therefore, do not generally retract any more than do the soft structures. A gash into a fleshy substance always produces a gaping wound, which is wide in proportion to the depth and length of the injury. From that hurt the dark coloured venous blood drains in a stream, while the bright scarlet or arterial blood is

DIAGRAM OF AN INCISED WOUND.

propelled forth in jets, sometimes to a considerable distance. These jets correspond with the pulsations of the heart; but, as syncope or fainting takes place, the emission ceases with the beating of the circulatory centre.

The danger consequent upon an incised wound is ever measured by the extent of the hæmorrhage. When large arteries are divided that fact is easily told by the size and the force of the jets sent forth. A strong horse may, from that cause, be dead in ten minutes. To enforce the difference between a lacerated and an incised wound, the reader is reminded of those painful cases frequently recorded in the newspapers; where a limb is by machinery torn from a poor man's body, and scarcely a drop of blood marks the deprivation; also of death by severing a throat, when sensation ceases ere the stream has flowed forth. The last is an incised, the first is a lacerated wound.

An abraded wound, in its mildest form, is simply a graze. The reader will, however, remember how acutely painful such accidents always are. The horse's sufferings are not highly estimated by the generality of people; nevertheless, an injury of this description is not to be despised, even when witnessed on the animal. A broken knee, as it generally is exhibited, is nothing more than an abrasion. An abraded wound may simply mean that the insensitive outer covering of the skin has been injured; it may also imply that the soft structures beneath have been sundered. Wounds of this kind are not free from danger when of magnitude. Little blood may flow, but the cutis is the most sensitive structure of the entire body. A needle's point cannot enter any part of the skin without sensation warning the person of a puncture. In human operations, division of the skin, or separation of the cutis, is known to constitute the major portion of the patient's agony.

DIAGRAM OF AN ABRADED WOUND.

The suffering attendant on the latter class of injuries is increased, by almost every abrasion forcing grit or dirt into the substance of the cutis. This, of course, is generally washed out. The torture accompanying a large abraded surface is, therefore,

very great; and horses, when suffering from accidents of such a nature, sometimes sink from the irritation consequent upon the injury. When the animals survive, the roots of the hair too often have been destroyed, and a perpetual blemish is the result.

A PUNCTURED WOUND is always dangerous; the hazard in this, as in every species of injury, is greatly increased, when inflicted on parts liable to any vast amount of motion. Thus punctures, occurring over the stifle joint, too often set our best surgery at defiance. The muscles of the hind leg contract with every movement of the body. Added to that, the part abounds with fascia.

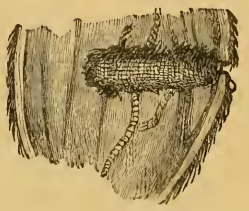


DIAGRAM OF A PUNCTURED WOUND.

The engraving supposes the soft parts to have been divided—in order to show the ragged nature and large extent of the injury, with the comparatively small opening, by which this amount of harm is characterised.

The majority of these wounds heal by suppuration. Fascia is a substance no pus can penetrate, and which is more easily rent than punctured. The exit of the secretion, therefore, is opposed in many directions, while the ceaseless motion occasions the matter to burrow. The sinuses thus produced are by the fascia guided to the stifle joint; and when once the synovial cavity is polluted by the intrusion of the unhealthy pus, all the best efforts of science are useless.

When a punctured wound occurs, the skin, being elastic, stretches before the instrument by which the wound is inflicted. The soft parts beneath the skin, not being elastic to the same degree as the integument, break down before the penetrating force. They are torn or lacerated; for generally the muscles receive a larger injury than would be calculated from the size of the instrument by which the blow was inflicted. The rent flesh must be cast off by a slough—corruption generally attends that process. Much of the pus secreted cannot find an exit through the opening in the skin; a large portion of it is confined within the puncture. There it decays and, being impelled by the motion of the limb, readily finds its way in all directions, save the upward one.

No judgment approaching to accuracy can be formed at the

first sight of a punctured wound. The probe may ascertain the depth of the injury, but it cannot tell the extent of damage done to the interior of the body. Therefore, whether the hoof is pierced by a nail or the muscles are lacerated by the shaft of a cart—be the instrument large or small—the consequences likely to follow upon the injury cannot be foretold.

A CONTUSION, in its mildest form, is simply a bruise. Injuries of this class, when of magnitude, are very deceptive; the surface is unstained by blood, and there is no flesh exposed. For these reasons the ignorant are apt to disregard such accidents, and to express surprise when they terminate otherwise than kindly. When a bruise happens, blood is effused in smaller or larger quantities according to the extent of the injury. A small quantity of effused blood, sufficient to discolour the human skin, may be absorbed; but when the amount is large, the powers of nature are defied. The blood thrown out not being taken up again, congeals, and ultimately corrupts. Then an abscess or a slough is necessitated. Both are attended with danger. The first may be deep-seated or superficial; either form is attended by much weakness. That generates considerable irritation, and may even be the cause of fatal hæmorrhage. Or it may lead to sinuses—the direction, the number or extent of which, when they do occur, is not to be predicated. A bruise is, consequently, not to be judged of hastily. The amount of pain which it provokes is even unworthy of dependence, as the injury may have hurt the bone or the tendon, and then, though the accident is rendered very serious, in the first instance no sign of agony announces the extent of the evil.

DIAGRAM OF A CONTUSED WOUND.

With regard to treatment, when a *lacerated wound* occurs, the first attention should be paid to the system, which has always been much shaken. Give, therefore, the drink composed of one ounce each of laudanum and sulphuric ether, with half-a-pint of water; repeat it every quarter of an hour, till the shivering, natural to the horse on these occasions, has disappeared, and the pulse has recovered its healthy tone.

Avoid all poultices of the ordinary kind; one composed of

one-fourth yeast and three-fourths of any coarse grain, excepting bran, may be applied. So, also, may a lotion thus composed:—

Lotion of Lacerated Wounds.

Tincture of cantharides . .	One ounce.
Chloride of zinc	Two drachms.
Water	Three pints.

Mix.

Keep a rag constantly wet over the wound.

Either will stimulate the parts, and probably prevent any tendency to unhealthy action. The yeast poultice produces this effect, by giving off carbonic acid; the lotion accomplishes this intention, by both its active ingredients. Each is stimulating, also disinfectant, and will counteract any filthy odour, which may attend the sloughing process; but the lotion is, perhaps, to be preferred, as it is more easily applied. When the slough has taken place, should hæmorrhage ensue, dash upon the part jug after jug of the coldest water; or should no very cold water be at hand, drive upon the mouths of the vessels a current of wind from the nozzle of the bellows. Continue to do this till the bleeding ceases, or until a surgeon can be obtained to take up the arteries.

The after treatment is simple. Apply, frequently, the solution of chloride of zinc, one grain to an ounce of water; that lotion will cleanse the wound and prevent unpleasant smells.

As respects feeding, this must be regulated by the character of the pulse. Should the beat of the artery be quick and feeble, no hay should be given; good thick gruel should constitute the only drink. Good oats and old beans, both crushed and scalded, should then constitute the food, and the utmost gentleness should be exercised towards the animal.

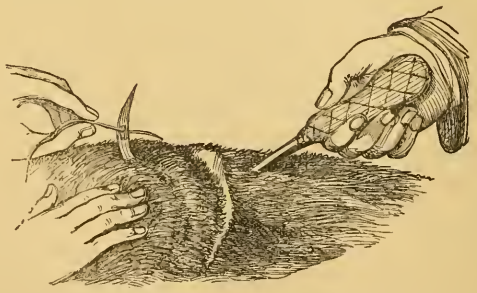
Should the pulse be natural, allow three feeds of oats each day, as in every kind of injury to the horse, more danger is to be apprehended from debility than from any excess of energy.

Incised Wounds.—When these happen, always dash the part with plenty of cold water, or blow upon them with the bellows. Place the horse in the nearest shed; motion promotes hæmorrhage, therefore a walk is not to be hazarded. The bleeding being arrested—for in severe accidents of this kind there is no time to

send for assistance—let the animal remain perfectly quiet, until the exposed surface has become almost dry, but on being touched by the finger feels sticky. Then draw the edges together and keep them in that position by means of sutures.

The best means of inserting these sutures is with a curved needle, fixed into a handle. The handle is wanted to obtain the necessary power, and the needle's point should be sharp to penetrate the hide of the horse, which in places is of considerable thickness. The needle is thrust through the integument about one inch and a half from one margin of the incision; it is brought out about the same distance within the divided soft parts. It enters the opposite side of the sundered flesh, even with the place whence it came forth, and afterwards it appears through the skin about equal distance from the opposite edge of the wound. There is a hole near the point of the needle. Through this opening a piece of strong twine or narrow tape is threaded—when, the instrument being withdrawn, the twine or

FIXED SUTURE NEEDLE. VERY USEFUL FOR INCISED WOUNDS OF NO GREAT DEPTH.



THE MANNER OF USING THE FIXED SETON NEEDLE.

A second person pushes the wound together, and when the point of the needle appears threads it with a piece of zinc wire or soft string. The needle is then retracted and released from the wire or string, whereby a suture is left in the wound.

tape is pulled into the puncture which has been made. The needle is then released, the suture being left in.

So many sutures as may be necessary are thus inserted. In small wounds these are about two inches asunder, but in larger injuries three inches apart. All are duly placed before any are tied; the whole being ready, the wound is forced together by an assistant, while the strings are fastened; care being exercised not to bring any of them actually tight, lest the motion of the body or the swelling of the part should drag the sutures through the flesh, and thereby tear them out.

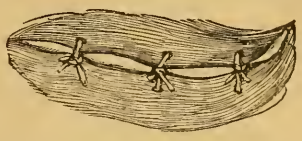


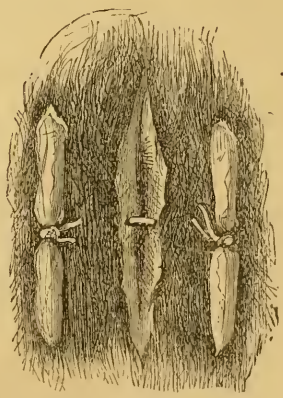
DIAGRAM OF SUTURES, WHEN TIED AND LEFT IN A WOUND.

A wound thus united may possibly heal by first intention; or the divided parts, when brought together, may join and give no further trouble to the surgical attendant.

Union by first intention is, however, somewhat rare in the horse, and should that not take place suppuration will be estab-

No. 1.

No. 2.



TWO KINDS OF SUTURES RARELY EMPLOYED UPON THE HORSE.

No. 1. The continuous suture which is employed for sewing up portions of bowel, when the intestines are injured and exposed.

No. 2. The deep suture or the quill suture. In the horse pieces of wood are substituted for quills. The wood is notched in the centre, and upon the indentations the sutures are fixed to prevent the movements of the animal from displacing them. It is sometimes employed to bring the sides of deep and gaping wounds closer together.

lished. So soon as the pus flows freely forth and the sutures appear to tighten or drag, cut them out by snipping the twine, but allow the strings to loosen before you attempt their withdrawal.

If this is not done, the sutures will speedily find an exit for themselves by causing the flesh, against which the tension acts, to be absorbed; thus, the original injury will be rendered more complicated, and the ultimate blemish must be altogether greater.

All that is required after the establishment of suppuration is to bathe the part with the solution of chloride of zinc, one grain to the ounce of water. This lotion will suppress any fœtor, and gently stimulate the healing process, and it will prevent the sprouting of fungoid granulations; it is necessary also to attend strictly to the directions laid down for feeding during the cure of wounds.

The treatment of an abraded wound chiefly consists in cleansing the surface with plenty of cold water, which should be allowed by its own weight to wash off any loose particles of dirt. No cloth or other aid should be employed to scrub the living flesh as though it were an insensitive board. The matter which cannot be removed by simply sluicing had better remain to be expelled by the secretion of pus. The horse, especially when terrified, endures pain very badly; indeed, the animal is so timid and so delicately framed, that it is always good surgery to spare all unnecessary suffering.

Support the body with laudanum and ether drinks, one ounce of each to the pint of water, as often as they may be needed. Let the food be generous, unless fever should arise, when the directions already given must be attended to.

Punctured Wounds require only one kind of treatment, whether a nail be driven into the flesh of the foot or the shaft of a cart be forced into the substance of the thigh. Here the knife must be employed; and, unless the animal shows evident symptoms of excessive weakness, it is better, perhaps, to operate while the parts are partially numbed by the shock than to wait until a morbid sensibility is provoked. Always enlarge the opening; do this in the foot by cutting away the horn of the sole around the small puncture left by the nail. When the soft parts are penetrated, probe the wound first; then, if possible, insert a knife to the bottom of the puncture, and with the edge downwards draw it forth. By this means a wound resembling a subverted < will be instituted. It will be narrowest towards the extremity, and widest at the mouth. A free opening affords a ready egress for

all sloughs and pus. It materially aids the healing process, and effectually prevents the establishment of sinuses; while the clean incision left by the knife is of small import, when taken into consideration with the other consequences of a punctured wound.

Support the animal, if necessary, or regulate the food by the symptoms.

A *Contused Wound*, when slight, may be rubbed with the iodide of lead ointment, one drachm of the active agent to the ounce of lard; when all enlargement will sometimes subside, and the effused blood may be absorbed. However, the horse commonly receives injuries of magnitude. In the last case, take a sharp knife and draw it along the entire length of the swelling. Make a long gash, only through the integument, at every eighth inch, and be careful to carry the knife through the integument, or to the lowest portion of the detached skin. Any sac that may be left is certain to retain corruption, and may produce fearful after consequences. The attendant measures consist in bathing the contusion with a lotion composed of chloride of zinc, one grain · water, one ounce; and diminishing the food or supporting the body as nature demands such treatment.

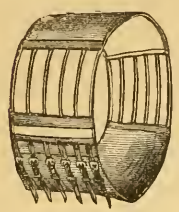
The after treatment of all injuries consists in keeping any external orifices open till all sloughs and pus have disappeared. In surgery, a large and depending opening, by means of which the interior may drain, is always to be preserved, and the knife, to this end, may be employed so often as the healing process threatens to prematurely close the wound.

Formerly, it was the practice to bleed after every injury; this was done to prevent fever. However, observation has shown that the vital powers are more often weakened than increased by the shock attendant on severe accidents. Whenever the contrary happens, it is far better to lower the pulse by repeated doses of aconite than to abstract that which will subsequently be necessary to repair injury.

It was also once the custom to fill wounds with tents or lumps of tow, and to bandage every injured part. These habits only served to confine that which nature was striving to cast out. They consequently did much harm, and are now happily discarded.

Mr. Edward Mayhew, many years ago, introduced a bandage which was intended to meet an inconvenience experienced when

a horse had the walls of the abdomen punctured. The annexed is made like a broad belt, and is buckled round the body. The bars are composed of vulcanised indiarubber; they will yield to the movements of the abdomen, and yet serve as sutures, supporting any pendant flap, while at the same time they will allow the wound to be dressed without disturbing the bandage. They also offer the advantage of permitting the attendant to pull one support aside without removing the whole.



A BANDAGE DESIGNED FOR WOUNDS ON THE TRUNK OF THE HORSE.

Every part in the horse subjected to much motion when wounded should have an adhesive plaster placed over it, and retained there until the suppurative action is confirmed. By this means is excluded the atmosphere which, when this precaution was neglected, has entered the wound, penetrated between the muscles, and, by distending the body, increased the suffering as well as led to the worst of consequences.

Wounds in veterinary surgery rank among the most formidable cases with which the practitioner has to contend. They are not so because the flesh of the horse is slower to heal than that of the human being. Indeed, the scale in this respect inclines toward the animal; but they are rendered slow to heal and difficult to cure by two causes. The horse is always impatient of restraint; any effort to confine the creature is more likely to provoke dangerous resistance than to induce the slightest symptom of amendment. The quadruped naturally delights in motion. It was formed for activity. Even when in its stall the body is never absolutely still. The position is being changed; the legs are frequently stamped; the head, eyes, ears, and tail are never quiet. This innate quality retards the union of sundered flesh. It favours the gravitation of pus between the muscles, and thus generates sinuses. These are the torments of veterinary surgery. Could the sinus be anticipated, or in all cases eradicated, the principal difficulty would be removed; but intelligent as the horse is, it has been found impossible to make it comprehend the necessity for quietude. Hence any trivial accident may lead to injuries of so extensive a character and so malignant a nature as will set the best endeavours, or the most consummate skill, at defiance.

CHAPTER XV.

OPERATIONS.

THE veterinary art is by no means rendered more successful by the cunning of its stratagems. Many of its objects are accomplished after the rudest and the most primitive methods. Not one, perhaps, is more coarse than the present method of casting or

THE PRESENT MANNER OF CASTING A HORSE FOR OPERATION.

throwing an animal previous to an operation. The reader has only to ask himself what condition the body must be in when, with the sight blinded, it is suddenly jerked to the earth; and how far it is fitly prepared by so violent a preliminary to be submitted to the knife of an operator?

There are few operations in veterinary surgery which a person

of moderate nerve and average intelligence might not himself perform. The author has seen gentlemen with titles, and others holding high rank in the army, indulge in the strange pleasure of singeing living flesh with the heated iron. But he has never beheld horsemen handling the knife. The latter would better become their hands than the first severe and disfiguring instrument, which, however useful it may have been found in certain cases met with in human surgery, nevertheless would be well abolished from veterinary practice, because of its indiscriminate abuse. Firing is employed for every and for no reason. Now, it is had recourse to because the joints are weak. Then, it is adopted because a gentleman is fond of seeing his horses scored. Next, it is used to gain time and thus prolong the treatment. Generally, it is brought forward because the practitioner does not know what else to do. Lastly, it is esteemed the crowning measure of routine practice.

We have often sought information from all sorts and conditions of men—scientific men and cab-drivers; but neither one nor the other have ever been able to explain in what direction firing acts, or the good it induces. "My horse was lame," they say, "before he was fired; he is sound now." This proves nothing. The long rest that is necessary after firing gives diseased parts time for nature's wise processes to exert their influence, which bring about cure, interfered with rather than assisted by the red-hot iron. The late Professor Syme, Edinburgh, once remarked to the reviser, "When will you veterinary surgeons cease to continue the barbarous system of firing?" A conversation ensued, and from that moment to this the firing-iron has seldom been in my hands, and then always against my advice. No person living can explain its *modus operandi* nor its uses. It represents an old farrier's prescription, and a most cruel and barbarous operation.

Already the public, in certain directions, have recognised its inutility, for very few horses are fired now in comparison with those of twenty years ago. Blemished horses, with scars on their hocks and legs caused by the heated iron, are exceptions now and not the rule; and the sooner this burning of flesh is altogether banished from veterinary practice the better will it be for the suffering horse and the pocket of the horse-keeper.

The knife, especially to the animal, is the most humane of

remedies. It affords often instant or immediate relief. The animal seems to suffer more from the restraint imposed than from the wounds inflicted. The chief sensation, with all forms of life, resides in the skin; so that the integument be quickly and effectually divided, the soft parts underneath have but little feeling. The interference with these last rather produces faintness or sickness than acute suffering. The knowledge of this fact will embolden many a humane person; though the writer trusts it will not be credited by all who are of an opposite character, since boldness, unrestrained by humanity, only renders the individual a savage without a savage's excuse.

Such operations as embriotomy, castration, and lithotomy are intentionally omitted, from a conviction that no gentleman would undertake them; and because, in every instance, they had better be entrusted to a regular veterinary surgeon.

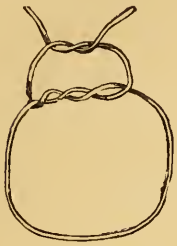
Before undertaking any operation, always reflect on what you are about to do, and make up your mind how you design to do it. Irresolution causes more suffering than the most perverted determination can inflict.

Where you anticipate much bleeding always endeavour, if possible, to divide the main artery with the first incision. This is by far the most humane, and therefore the safest practice; the vessel, being divided, can be taken up, and all further flow of blood thereby checked. But if the artery be left to the last it remains to fill the smaller branches. These are, of necessity, frequently severed. Each, as it is cut, bleeds more or less freely; thus the hæmorrhage is far greater, and the operation far more difficult, than if the main trunk had been secured at the earliest possible period.

If, during an operation, you make an accidental incision into a vessel, either take it up (which is the better way) or cut it short off when there is a chance of its retracting, and of the bleeding being thus arrested. Vessels of large size may, when requisite, be excised and tied, the vital current being afterwards carried on by the dilatation of the lesser ducts.

To tie an artery, it is imperative to secure the end of the vessel; this, if possible, should be accomplished with the forceps. When the mouth of the vessel is much retracted, it may be necessary to employ the knife; but that practice should be viewed only as the last resort of the proficient surgeon.

The end of the artery being fixed and drawn forth, a piece of strong silk thrice twisted (after the method represented in the inferior circle of the annexed illustration) is passed over the vessel. The silk is then drawn tight, and will generally remain fixed. However, sad accidents have occurred by operators trusting to so doubtful a security; for that reason it is always advisable to make another twist (as shown in the smaller circle of the illustration), which will render the knot secure.



THE LOOP, BY MEANS OF WHICH THE ENDS OF ARTERIES ARE SECURED.

Even a vessel of the second magnitude may be obliterated, as the carotid artery or the jugular vein, without life being necessarily sacrificed. However, it is always well to spare these parts, or, when either is lost, to arrange so as the absence of them may entail the least possible inconvenience upon the animal. Thus, if the carotid artery be lost, place the food low down, and thereby aid the flow of blood to the head. If the jugular vein be destroyed, then put the fodder high up, that the current from the head may be facilitated.

Never, on any account, remove any portion of skin which is not involved in some fearful injury, or separated from its attachments by the action of disease.

Skin is the part of the body which is never reproduced, and even the place whence it is absent always heals slowly. However loose the skin may appear—however disproportioned it may seem, after some tumour has been removed—respect every particle of it. Before the wound can heal, inflammation must set in. That process ended, the skin, under its action, will have contracted, and in the end there will be only sufficient integument to cover the part. Whereas, if the slightest amount be excised to such an extent, there will for a long time remain a gaping sore.

Never spare the knife—think well before you touch that tool, but, having it in hand, assure yourself its edge is sharp, and never do at two cuts that which might have been accomplished in one.

Always slit up a sinus, where such a proceeding is possible When the sinus is too long, supposing the pipe to take an internal

direction, as from the withers to the chest, insert a seton with the guarded seton needle, a representation of which is given below.

THE GUARDED SETON NEEDLE.

The blade of this instrument is generally about two feet long. Before using it, the cutting head is always retracted, by pulling backward the nut at the extremity, and securing it in its place by means of the screw situated on the middle of the handle. The blade then reposes upon a blunt companion, and may with impunity be inserted down any sinus or false canal. Having reached the bottom of the pipe, and all important vessels being passed, the screw is loosened, and the projecting end of the blade (at the extremity of the handle) is struck forcibly, when the sharp point is driven forward, and this pierces the flesh.

THE SETON NEEDLE PROTRUDED, THE SCREW BEING LOOSENED AND THE NUT DRIVEN DOWNWARD.

Behind the cutting head there is a free space. Through that opening a long piece of tape is threaded, and the instrument is withdrawn, pulling the tape into the sinus, in which it remains. A knot is made at either end of the tape; thus a seton is with safety placed in situations where the depth to be penetrated would defy ordinary measures, and the vessels to be passed would render such measures more than doubly hazardous.

The use of a seton is to act as a drain, or to stimulate an unhealthy canal,—to provoke a sinus to secrete healthy pus, instead of a thin, and often a foul discharge,—and thus to cause the diseased pipe to heal, or to become obliterated.

When operating, always make your first incision through the skin, rather too large, than in the least too small; remember, the division from within outward occasions much less pain than the separation made after the ordinary fashion—from without inward.

Never spare hair—the substance is readily reproduced. It can

be wished to be spared, only to conceal the fact of an operation having been performed. Always refuse to become a party to dishonesty. Do what is necessary for the proper performance of your office. The removal of hair, which may otherwise interfere with your sight, is essential; therefore, cut it off, regardless of any wish to the contrary.

Instruct your assistants how to cast the horse beforehand—leave that business to them—never meddle yourself. The writer has seen veterinary surgeons, in their operating dresses, push and haul with the utmost energy. Such silly people have, doubtless, thought themselves exalted by this exhibition of violence. It would have been more to their credit had they devoted half the energy to teaching their people beforehand. But in what condition must their hands and temper be after having taken a lead in a struggle with a horse for mastery?

A surgeon should always be cool—his head should direct his hand; his knife should be held lightly; his eye should be quick, and his mind prepared to meet any accident. He should do his office neatly and, if possible, without soiling his person. The ripping cut and the bloody hands alone distinguish the ignorant butcher from the scientific operator.

When an animal to be operated upon has not been put under the influence of chloroform, during every operation enjoin the strictest silence upon the spectators. The horse is never vicious, but is always timid. Sounds have a powerful effect upon animals which cannot understand speech. Every word uttered, even in a whisper, should be of assurance to the sufferer; for the horse is only to be feared in its efforts to escape from some supposed peril. It becomes mad in its alarm. It then puts forth its strength and exerts it without regard to consequences.

There are more ways than one by which a horse may be cast. But the one now in usual operation, if carefully conducted,—*i.e.* if the horse be placed over a thick and soft bed of straw or, better still, be thrown on soft ground, such as is met with in some fields, and is carried out by four men who thoroughly understand the work before them,—represents by far the most safe and expeditious mode of fixing a horse to comparative immobility for any operation.

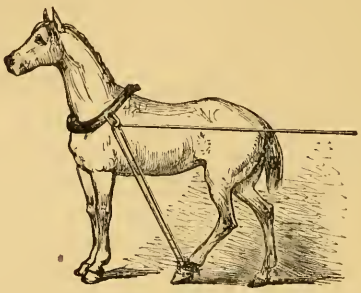
The late Mr. Rarey introduced a method for taming vicious horses. It is in reality a system of throwing horses by degrees,

leg by leg, until the whole fabric is brought by exhaustion to submission; the plan adopted is better explained in Rarey's own words.

"Everything that we want to teach the horse must be commenced in some way to give him an idea of what you want him to do, and then be repeated until he learns it perfectly. To make a horse lie down, bend his left fore leg and slip a loop over it, so that he cannot get it down. Then put a surcingle around his body, and fasten one end of a long strap around the other fore leg, just above the hoof. Place the other end under the surcingle, so as to keep the strap in the right direction; take a short hold of it with your right hand; stand on the left side of the horse, grasp the bit in your left hand, pull steadily on the strap with your right; bear against his shoulder till you cause him to move. As soon as he lifts his weight your pulling will raise the other foot, and he will have to come on his knees. Keep the strap tight in your hand, so that he cannot straighten his leg if he rises up. Hold him in this position, and turn his head towards you; bear against his side with your shoulder, not hard, but with a steady, equal pressure, and in about ten minutes he will lie down. As soon as he lies down he will be completely conquered, and you can handle him as you please. Take off the straps and straighten out his legs; rub him lightly about the face and neck with your hand the way the hair lies; handle all his legs, and after he has lain ten or twenty minutes, let him get up again. After resting him a short time, make him lie down as before. Repeat the operation three or four times, which will be sufficient for one lesson. Give him two lessons a day, and when you have given him four lessons he will lie down by taking hold of one foot. As soon as he is well broken to lie down in this way, tap him on the opposite leg with a stick when you take hold of his foot, and in a few days he will lie down from the mere motion of the stick."

There are, besides the hobbles, two other inventions designed to limit the capability of resistance. One is the side line. A soft collar is put over the horse's head, and a hobble is fastened to the foot it is desired to have elevated. From the collar is dependent a metal loop, ring, or other contrivance. By the side of this a strong rope is attached. The cord is then passed through the D of the hobble; afterward it is brought back and run through the side

ring or loop. A man then takes hold of the end of the rope, and by gradual traction causes the leg to be advanced. It is neither wise nor humane to drag the foot off the ground. A horse which



THE SIDE LINE.

will stand quiet with both feet resting on the earth is rendered restless when one leg is fastened in the air.

The occasion which makes it imperative to apply the side line is when the hocks or hinder parts are examined. Many unbroken horses, though quiet in other respects, will not allow these portions of the body to be touched. By causing one leg to be advanced,

THE DOUBLE SIDE LINE.

the other is deprived of all power as a weapon of offence. The horse would obviously fall if he were to project the only free hind member; and the timidity of the creature indisposes it to incur so vast an indignity.

The other invention is the double side line. A rope is fixed to a loop on either side. The loop or ring is attached to a soft collar. The rope is afterwards threaded through a hobble on each pastern. Both legs are then gently pulled forward, and the animal, having its posterior supports drawn from under it comes to earth. The ropes are held tight, while the horse is turned upon its back. The instant it is in that position somebody seats himself upon the head, while the body of the animal is propped up by numerous trusses of straw.

This last is but an imperfect method of casting. In general, it is rendered still more cruel by the abuse to which it is subject. The ropes are commonly pulled with an utter disregard to the living body upon which they operate. The hind legs are often drawn to the shoulders, and frequently additional cords are employed to make the poor creatures more distorted and more fixed.

Should a horse, when under the knife, struggle, do not attempt to contend with the animal. Immediately leave hold of your instruments, and withdraw your person out of danger. Allow your knife, etc., to remain; it will seldom be displaced or, if cast out of the wound, can be easily reintroduced; whereas, did you endeavour to snatch away or to retain your hold, the most lamentable consequences might be the result.

Another caution, and this part of the writer's office is concluded. When you operate upon a leg, have that limb uppermost;

unless your incision is made upon the inner side. Have the foot placed upon a pillow or sack, stuffed with straw, and a strong

webbing put around the hoof. The webbing give to a man who is to pull at it. The dragging sensation renders the horse inclined to retract the member; therefore, place yourself in front of the limb, or on the same side as the man who holds the webbing. The fore leg, when advanced, cannot be readily employed as a weapon of offence, and the hind limb is always, when used in defence, projected backward.

TRACHEOTOMY.

This operation is, perhaps, the most humane recourse of veterinary surgery. Neurotomy may save the horse from greater and longer suffering; but tracheotomy is performed, unlike the former operation, upon an animal in an unconscious state. Difficult respiration, either from tumour pressing upon the larynx, —infiltration upon the lining membrane of the larynx, — or choking from various causes, produces imperfect oxygenisation of the blood. The vital current being impure, of course the brain, which it nurtures, is not in a condition of health or activity. The consciousness is impaired or altogether destroyed; and immediate relief is experienced after the performance of the operation. The recovery is as rapid as the previous symptoms were alarming. The altered aspect of the animal is as though the body were resuscitated. In certain cases, where every breath is drawn in pain, the ease afforded by tracheotomy is most marked. It makes little difference to nature by what means the air is inhaled, so that a sufficiency of dilute oxygen comes in contact with the absorbing membrane of the lungs. This, when the larynx is closed or diseased, tracheotomy permits to be accomplished. It is equally beneficial, safe and humane. However ugly its description may read, it is, in practice, to be strongly recommended.

The general fault with veterinary surgeons is the delay, which commonly pushes off the operation to the last moment. In this delay the proprietor is, perhaps, equally or even more at fault. Hope leads the owner on to the very last, and even then it is with reluctant horror that consent is given "to cut the horse's throat." Such is the term by which certain practitioners characterise tracheotomy; and though it is uttered merely as a joke, yet it creates an impression which acts against a harmless operation.

In agricultural districts, the veterinarian is frequently knocked up at night by a messenger, who announces "Farmer Hodges's horse be a dying." The farmer may live several miles off in the country; and the reluctant sleeper hurries on his clothes to obey the implied summons.

In due time the pair reach Farmer Hodge's homestead. It needs no finger to point out the stable. The sound of laborious breathing effectually notifies it. However, the practitioner, upon entrance into the place, is horrified to find himself there with no better company than a boy and a rapidly sinking animal. The circumstances demand other assistance. The horse doctor cannot help giving voice to his requirements. The lad hearing this says, hastily, he will fetch somebody very soon,—hangs up the lantern, and vanishes into the darkness.

Minutes pass, and no footfall greets the ear. The divisions of the hour are struck by the village church, and still no sound of returning steps. The animal becomes worse and worse. In its disabled state it fears to lie down, as that position impedes the breathing. In its efforts to stand, it reels about—now falling to one side, and then to the other. Yet the departed messenger does

TRACHEOTOMY, AS PERFORMED UNDER DIFFICULTIES—A COMMON OCCURRENCE.

not return. The veterinarian finds the limits of delay are passed: ten minutes more, and the quadruped will be down. He takes out

his lancet. One foot from the breast bone, and as near the centre of the neck as the rocking motion of the horse or the flickering light of the lantern will allow him to aim, he plunges the blade deeply into the flesh, if possible, at one cut dividing the cartilages of the trachea. He has little control over the incision. Frequently, a gash results from the tottering of the animal. Mostly, he divides more than he would have done, had daylight and assistance been afforded him.

The incision being made, the fingers are thrust into the wound, to keep the division open. At first this may be difficult; but, as time proceeds, the standing of the horse becomes firmer, and the breathing less noisy. The veterinarian is, however, impatient at the delay and his enforced position. He is just beginning to despair, when the messenger returns, accompanied by a sleepy companion. Both are surprised at the condition of the horse and, not observing the wound, imagine the animal has been cured by magic. However, to the demands of the equine medical attendant, nothing like a tracheotomy tube can be procured. At last the spout of the tea kettle is thought of; and the good dame awakens in the morning to find her kettle demolished and its spout thrust into the "plaguy horse's throat."

It is the curse of veterinary surgery, that nobody appears to understand when an operation is required. The practitioner, therefore, is seldom prepared for its performance. The circumstances allow him little time to think, and none to return, or to fetch the necessary instruments.

However, when he has proper time and choice, he should always make a free incision through the skin and panniculas carnosus. Make this opening about one-third up the neck, measuring from the chest. It is more general to open the windpipe at a similar distance from the jaw, and, assuredly, the superior incision has this advantage, that there is less to cut through. But where no important nerves or vessels are endangered, surgery cares little about the depth of a wound; the chief attention being given to the probable after-consequences.

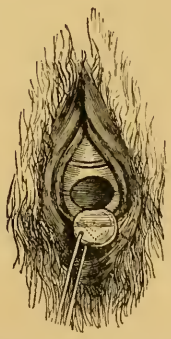
The superior portion of the neck is especially the seat of motion; it varies with every turn and movement of the head. Hence, the end of the tube is apt to be brought into constant contact with the lining membrane of the trachea, and horses have

been slaughtered with huge tracheal abscesses, to all appearance produced solely by wearing the tracheotomy tube.

To avoid this danger, the author chooses for incision a spot nearer to the chest, where the motion is less constant and not so varied. Even at this last place all danger is not entirely surmounted, in consequence of which a horse, while wearing a tracheotomy tube, should never be permitted to feed from the ground.

At the commencement, when the operator has leisure, he generally does not cut too deep. The first incision fairly divides the skin and panniculas carnosus quite in the middle of the neck, and is rather longer than a bystander would deem to be absolutely necessary. The elasticity of the skin will somewhat shorten the opening, while the torture of repeated enlargements will be avoided, and the more important structures beneath the skin will be fairly brought into view.

DIAGRAM, SHOWING THE STRUCTURES TO BE INTERFERED WITH DURING THE PERFORMANCE OF TRACHEOTOMY.



THE MANNER IN WHICH THE CARTILAGES OF THE TRACHEA ARE TO BE EXCISED.

1. 1. The Sterno Maxillares Muscles (a pair) have to be separated, being joined by fine cellular tissue.
2. The Sterno Thyro Hyoidei Muscles, lying under the first pair, also have to be divided, being similarly united.
3. The Trachea, which is fully exposed when the above muscles are disunited.

In the centre of your division will appear two long muscles, joined together by a fine cellular union; that union you are to separate; it consists only of cellular tissue, and will necessitate

more care than exertion. Underneath the divided muscles will be found two others, smaller and paler, but also joined together by means of fine cellular tissue. These are also to be sundered, and then the trachea lies exposed. There is neither nerve nor artery nor vein to avoid, or to take up in the performance of tracheotomy. All consists in making your primary incision large enough and, subsequently, in not attempting more than the division of two pairs of muscles.

The commencement of the incision should be made at the spot already indicated. After the skin is cut through and the muscles are divided, two assistants should be obtained to hold them back, while a circular piece is excised from the cartilages of the exposed trachea.

The trachea is formed of numerous cartilaginous rings, each half-an-inch wide, but so united by elastic tissue that the whole form one continuous tube, reaching from the head to the chest of a horse. If possible, only two of these rings are to be interfered with; that is, a half circle should be cut out of each, which, with the elastic connecting medium, will make an opening of one inch in diameter. Both the rings, however, should be perfectly divided; but a half circle should be excised from one, leaving a portion of cartilage to keep the remainder in its place. This matter, probably, may be made more clear by the engraving in the previous page.

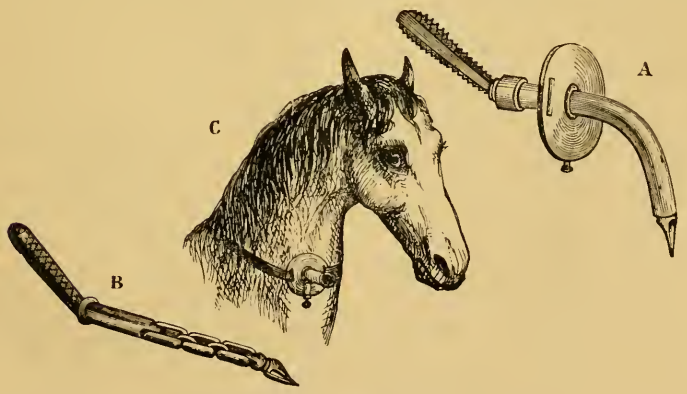
After the first half circle is made, or when a portion is cut off the first cartilage, that piece should be bent outward. The elastic connecting substance will readily permit this to be done, and the current of fresh air admitted will considerably refresh the animal. The cartilage being bent outward it should be leisurely transfixed by means of a sharp needle armed with strong twine. The string may be fastened to the button-hole of the operator's waistcoat, and afterwards the circle be leisurely completed.

The twine is necessary, because the spasmodic breathing has drawn the excised portion of cartilage upon the lungs, and thereby done as much mischief as the operator designed to do good. By bending the half circle outward, some relief is afforded to the breathing, and the character of the respiration partially benefited. The process is, however, rendered more safe by the employment of the loop; but care should be taken, when subsequently using the

knife, not to cut the string. Therefore, before the circle is completed, the cartilage should be bent backward (as shown in the previous engraving), then laid hold of, and, when firmly grasped, the excision ought to be perfected.

A tube has to be worn afterwards; this is put into the opening and fastened in by means of a strap or tape passed round the neck. There are many tubes sold at the instrument-maker's for this purpose; the majority, however, are far too large. None should be beyond one inch in diameter. The horse only requires to inhale part of the air through the cannula, the remainder coming, as before, through the larynx. A free space of one inch is, therefore, plenty to admit the deficient oxygen; for no animal could live through an operation were air, previous to its commencement or during its continuance, altogether excluded.

To insert this cannula, no cartilage need be excised; a puncture is made with a knife through the connecting medium of the tracheal rings, and through this puncture the tube is driven. It



TRACHEOTOMY TUBE.

A. The Cannula, with a shifting shield, armed with the pointed Trochar.
B. The Trochar withdrawn from the Cannula, showing its peculiar construction.
C. The Cannula fitted into the horse's Trachea, showing how the movable shield may be adapted, by means of a screw, to the size of the horse or the swollen condition of the parts.

is of all use for temporary or immediate service; but obviously would not do for a continuance.

The objection to tracheotomy, when designed to last for any period, is that the cannula, by irritating the lining membrane of the larynx, is apt to provoke abscess, which impedes the breathing

to a degree that destroys the life. The author has seen some fearful instances of this effect; but of all tubes, that invented by the French seems to be least open to this objection.

PERIOSTEOTOMY.

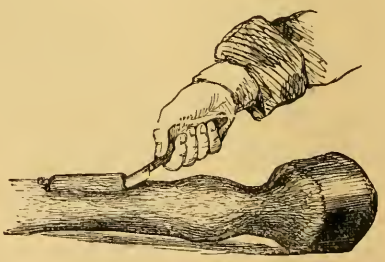
This operation was first applied to the horse by the late Professor Sewell. It is intended to relieve the lameness consequent

A PAIR OF ROWELLING SCISSORS. FOR MAKING SMALL INCISIONS THROUGH THE HORSE'S SKIN.

A SETON NEEDLE ARMED WITH A TAPE, A, AND FIXED INTO A HOLLOW HANDLE BY MEANS OF A SCREW, B.

upon exostosis, situated on the shin-bone. The chapter on periosteotomy will be retained in this work, although the reviser con-

A BLUNT SETON NEEDLE.



A TUMOUR BEING CUT WITH A PROBE-POINTED KNIFE.

siders it to be an operation calculated to increase the evils rather than to effect cure of lameness consequent on the existence of bony growths; at the same time it is important that horsemen should know in what the operation consists and the mode of its performance. A pair of rowelling scissors are first employed to snip the skin above and below the tumour. Then a blunt seton needle being fixed into a hollow handle by means of a screw, and

armed with a tape knotted at one end, is to be used. The needle is violently driven through and breaks down the cellular tissue, which attaches the skin to the tumour. The point is forced to enter at one snip, and come out at the other; after which the needle is withdrawn by the first opening. A probe-pointed knife is then introduced into the space thus made; the tumour is sliced into as many pieces as may please the operator, or the nature of the growth will admit of. The knife is afterwards retracted, and the needle released from the handle is passed through the openings, or in at one snip and out at the other. The knot at the end of the tape prevents that being drawn after the needle. The unknotted end is next withdrawn from the needle and tied into a large knot, the whole forming a seton. The operation is occasionally varied by smearing the tape with terebinthinate of cantharides, and sometimes by blistering over tumour, seton and all. This last practice may add to the severity of the operation, but it seems calculated to do little good. Breaking down the attachment of the skin and slicing the tumour appear designed to deprive the growth of blood, while a blister seems calculated to draw to the part an excess of that which the operation was intended to dispel.

A HORSE'S LEG WITH TWO SNIPS UPON IT, C, C, OUT OF WHICH HANG THE TWO KNOTTED ENDS OF A SETON, D, D.

Periosteotomy is not very highly esteemed by the vast majority of practitioners. For the simple reason that the after-results are usually disastrous, a horse may be thrown when lame, and may in a few days after the operation go soundly. The periosteum has been divided over the seat of the bony enlargement, and thus the pressure which caused pain, etc., being removed, the lameness ceases, but the knife and the introduction of the seton sets up inflammation of the part to so great an extent as to cause the development of bone in excess of that which caused the primary lameness: the last state is consequently worse than the first.

A modification of periosteotomy might perhaps be tried. Omit the seton altogether; make an inferior snip with the scissors; introduce a sharp-pointed needle, and cut a channel. Then insert a probe-pointed bistoury, and incise the tumour. If periosteotomy

were to prove successful, it probably would be so in this shape. The author has seen small benefit result from the after-use of the seton, but by operating in the manner proposed all the subsequent blemish would be avoided.

The motive for the above proposal is to spare the suffering of the animal. If the hair is cut short previously, and pressure made above the snip of the scissors the wound need occasion little pain. A sharp point cutting its way through cellular tissue would not cause one tithe of the agony which follows the use of a blunt instrument, necessarily tearing, stretching, and breaking a passage through a living body. Cartilage or bone, in a state of health, has small sensibility. The employment of the knife would, therefore, provoke no struggle; while all the after-torture of a seton applied directly to the surface of a wound would be avoided.

Perhaps it would be best to bind a broad tape with a cork under it and upon the vessels, round the leg, before the operation, thereby pressing on the nerve and cutting off the supply of blood. This would probably deprive the leg of all sensation. The most severe part of this method of periosteotomy would be the after-consequences. The incised tumour would inflame; the vacant channel would have to unite. The one would occasion agony, the other be probably attended with violent itching. The limb, therefore, should be bandaged, even though a wound upon the horse's body does not do so well when covered up. The bandage, however, will prevent the animal from injuring the sore leg with the opposite shoe, which a horse may be provoked to attempt by that irritation which attends the healing process.

NEUROTOMY.

Neurotomy is the division of the nerve which supplies the hoof of the fore leg with sensation. The foot of the horse being moved through tendons, by muscles from above, and having in itself no muscular power, obviously has no occasion for a motor nerve. Consequently, the nerve running to the foot is wholly sentient. It is the means of communication, through which pain or pleasure is transmitted from the hoof to the brain.

To take away a portion of this nerve is evidently to separate the medium of such communication. Feeling can no more travel

along a divided nerve than electricity can along a broken wire. The knowledge of this fact has led to a portion of the nerve being excised; and the doing of this has been named neurotomy.

A nerve is a very compound structure. It is composed of numerous fine filaments, or small threads, bound together by a cellular sheath, called neuralema. Healthy nerve feels firm, and has a brilliant white appearance; unhealthy nerve is of a yellowish tint, and is of a less solid texture.

The operation of neurotomy is certain relief; but that relief is of uncertain duration. The divided nerve, after a time, reunites. The junction thus formed carries on all the functions of the perfect structure; but a bulb is left behind at the place of union. This bulb is to be easily felt by pressing upon the seat of neurotomy, externally, with the points of the fingers; and the bulb, being felt, leads to a knowledge that the horse has been subjected to the operation. Neurotomy, therefore, can never be concealed if pains are bestowed upon its detection. The operation, however, is not successful in every case.

In some animals the wound has just closed, when junction seems to be formed between the divided ends of the nerve. The lameness then returns as acutely as ever.

In others, the horse will proceed to work, and continue sound ever after, the restored power to use the foot having, in the last case, seemingly destroyed the affection.

Some animals are subjected to operation so late that disease has had time to weaken the pedal structures. The consequence is that no sooner does the absence of feeling tempt the horse to throw his entire weight upon the foot than the navicular bone fractures, or the perforans tendon ruptures.

Certain horses, from a tingling sensation in the neurotomised foot—similar to that felt by men in the imaginary fingers of an arm which has been amputated—will stamp violently, till they injure it, and provoke suppuration; while other feet are so irritable that the head is bent downwards, and large pieces from the hoof literally bitten off. To account for this last circumstance, the reader must remember that though the hoof seems to itch, it, in reality, has no sensation to preserve it from the teeth of the provoked animal.

Cases occasionally happen of horses having picked up nails, or

having incurred wounds in the foot, which, being deprived of feeling, the animal wanted the power to recognise. No lameness was exhibited, and the injury was necessarily unattended to. The foot has been left alone till the hurt has induced mortification.

Weak feet have not been able to endure the consequences of operation. They have sustained no external injury; but the heaviness of tread attendant on a loss of sensation has so battered the senseless member, that suppuration has been induced. The hoof has, therefore, been cast off and the horse been destroyed, although it was discovered in the stable standing with the utmost composure upon the bleeding and exposed flesh.

These are a few of the disagreeables attending a most humane and successful operation. The first requisite for the performance of neurotomy is a sound knowledge of anatomy. A familiar acquaintance with the course of the nerve is essential. It descends in two main branches from the knee, one on either side of the leg. It travels in company with and behind the artery and vein on the inner side of the fore limb. On the outer side it is accompanied by no vessel. About the centre of the leg, however, the two nerves are united by a branch, which travels over the perforans tendon, connecting the sentient fibres of either side. It is, therefore, essential in the performance of neurotomy to make the primary incision rather low down, especially if it is meant that the high operation should be accomplished, or that all sensation should be destroyed on one side by a single division.

THE COURSE OF THE NERVE EXPOSED.

a. Denotes the nerve of the frog.

At the pastern the nerve divides; the posterior branch runs direct to the frog. The anterior branch travels in front of the artery for some distance, when it takes a more forward course, dividing into several separate branches.

The generality of operators remove about an inch of the main trunk before the nerve divides, or above the pastern; and the result certainly confirms the soundness of such a practice.

The nerve of the frog is, however, frequently excised. The objection to this is the junction of a filament of the anterior branch with the nerve below the excision. That union

should deprive the operation of all effect; but, notwithstanding, the division is sometimes beneficial. The operation is, however, never certain, and to that circumstance the proprietor must make up his mind when he sanctions its performance.

Always examine minutely any horse submitted to you for neurotomy. Do this to discover if the operation has been previously performed, the object being that you may thereby be prepared for some trouble in mastering the retentive consciousness of the animal; likewise, that by such inquiries you may decide upon the benefit likely to result from the operation. Also, that you may be warned of a bloody and a tedious job. The leg which has previously been subjected to neurotomy becomes doubly vascular. We know of no reason to account for this phenomenon, excepting it may denote the cost at which nature repairs her higher order of structures.

Before you consent to operate upon any animal, examine the feet. If the hoof is weak or even weakly, refuse at once. If the hoof be strong and thick, the wall upright and the frog small, you

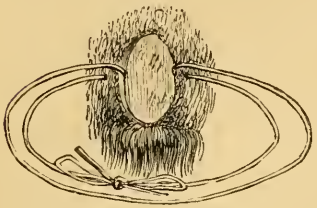
A HORIZONTAL INCISION, WITH THE HAIR CLIPPED ABOVE THE OPENING.

A PERPENDICULAR INCISION, WITH THE HAIR CUT OFF ABOVE AND ON THE SIDES OF THE WOUND.

may consent, with the best hopes of success. Have such a horse put into the stable, and the diseased foot or feet kept wet for a week prior to the operation. This frequently has the effect of constringing the arteries, greatly depriving the part of blood. That result renders the use of the knife more cleanly, and more easy. Have the hair cut short over the place or places where you design to make your incisions. By so doing all chance of hair getting into and irritating the wound will be effectually destroyed.

Make an incision through the skin, about three quarters to one inch long. Have a needle and thread ready—a strong surgeon's

needle and a stout twine. Pierce the divided skin from the inside to the outside, leaving a moderate piece of twine hanging out of the wound. Carry the twine under the leg, and pierce the integument on the other margin of the wound; also, from the interior to the exterior. Then bring the piece of twine, left hanging out of the first puncture, and the needle together at the back of the leg. Slightly tighten the twine; fasten these two ends in a bow, and the effect will be to keep the sides of the incision asunder.



THE MODE OF FASTENING BACK THE SIDE OF A PERPENDICULAR WOUND.

If you design to perform the high operation, choose a spot a little above the pastern, and incise the skin at one cut, if possible. The high operation is most approved of for general purposes, and, as before remarked, destroys sensation in the entire hoof. Some

The superior opening represents the place where one side of the foot may be deprived of sensation by a single division.

The two middle incisions denote the part where either the fore or after portion of the foot may, perhaps, be rendered void of sensation.

The two inferior cuts suggest the situations where, probably, the parts of the foot toward which the incisions point may be made insensible.

proprietors think it well to leave a little feeling in the forward portion of the foot, which is free from disease. This is done to escape those results that have already been enumerated, as the effects of total insensibility. The high operation is, therefore, performed only on one side, and the posterior or low division on

the other. There are two spots at which the low operation may be accomplished. The author has given the reader a representation of the anatomy of the leg. He now presents a view of the places where the incisions can be made.

Either of the lower operations, regarded by itself, is very uncertain in its effect; and, if taken both together, they present no advantage over the superior opening.

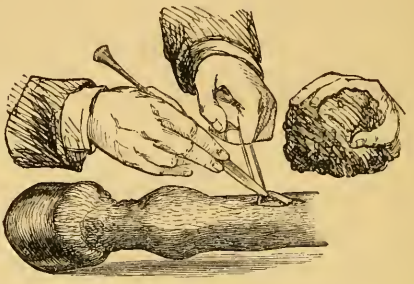
These remarks may be better comprehended, by comparing this engraving with the course of the nerve shown in the previous illustration.

When the skin is divided—supposing the horse is neurotomised for the first time—nothing is visible but white looking, cellular tissue. This must be carefully dissected away with a pair of forceps and a scalpel. Dissect on, until the nerve and artery are exposed plainly to view. Then take a crooked needle and thread. Pierce the nerve—this you may do fearlessly. The author has not known it produce pain. The fibres composing the nerve are so fine that the needle's point is blunt when compared with them. It, therefore, glides through them without pricking any of the filaments.

If the horse has been operated on before, you must expect a tedious and sanguinary business. It is then of all importance to obtain a very attentive and equally nimble man to take the sponge. Blood will follow every movement of the knife. However, with each cut, you must retract the hand; and the man who has care of the sponge must quickly, surely, and forcibly cleanse the wound. When the sponge is withdrawn, for an instant and for an instant only is there a clear view of the part. The operator must be ready to make the most of that glimpse; for, the next moment, blood flows over the lips of the orifice, and all is concealed from view. Thus we proceed, rather snipping than cutting; taking away particles instead of flakes of cellular tissue, till the nerve is exposed. Then it is fixed with the needle as before directed.

The nerve being caught, withdraw the needle, leaving the thread behind. Tie both ends of the thread together, and insert the first finger of your left hand into the loop thus formed. By gentle traction, raise the nerve a little, and with the knife release its inferior attachments. Then let the man who held the sponge make pressure with all his force upon the artery and nerve, *above*

the incision. After this has been done about a minute, and by the stoppage of the circulation, you may conclude the sensation to be

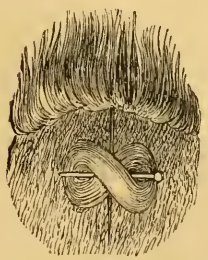


THE LOOP RAISING THE NERVE WHILE THE KNIFE LOOSENS ITS INFERIOR ATTACHMENTS.

in some degree numbed, insert the blade of the knife under that portion of the nerve which is nearest the body, and cut boldly upward.

A spasm mostly follows the division; but it is of short duration. Afterwards dissect about one inch of the nerve from its attachments, and remove this inch from the main trunk. No sign of feeling will follow the excision when made lower down. All communication with the brain has been cut off by the previous division, and the sensorium no longer takes notice of any violence offered to that part of the body which has been isolated.

Next, having sponged the part, close the wound by means of a pin forced through the lips of the orifice. Then twist a little tow round it in the form of a figure of 8. That being finished, so much of the point as protrudes is to be removed with a pair of wire nippers; a bandage is then put on; and, if both sides of the limb are to be neurotomised, the horse is turned over. All being accomplished, return the horse to the stable, but watch the pin which fastens the wound. If the incision continues dry, the pin may not be removed till six days have expired; but if the slightest appearance of pus be suspected, immediately withdraw the pin, and remove the tow, treating the part with solution of chloride of zinc as though it were a common wound.



THE BEST WAY TO CLOSE THE WOUND CONSEQUENT UPON NEUROTOMY.

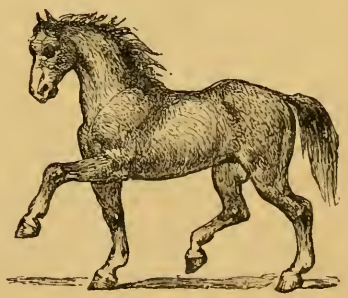
There are various knives used for the performance of neurotomy, but the one invented by Mr. Woodger can be recommended as the most useful for this operation.

MR. WOODGER'S NEUROTOMY KNIFE.

To use this instrument.—After the nerve is raised, insert the crooked point, with the edge towards the body of the horse; then drive the knife forward. By this simple means, the cutting portion of the blade is brought violently in contact with the nerve, which is excised at the proper point, and about an inch is left hanging out below the incision.

The after treatment of neurotomy consists in letting well alone, if all goes on rightly. Should pus make its appearance, bathe the wounds, thrice daily, with the solution of chloride of zinc,—one grain to the ounce of water. Remove the bandages from the legs after the horse has entered the stable. The incisions heal more readily when exposed to the stimulating effects of the air. Place a cradle round the horse's neck, and feed liberally. Avoid all purgative medicine; you now want an injury repaired, and do not desire to reduce the vital energy.

When the wounds have healed, the horse may be gradually taken once more to work, but it should not be fully used. Excessive and too early labour is the cause of the many serious objections taken to a merciful operation. The horse for some period does not feel his foot. He does not flex the pastern as the hoof nears the ground. The foot is placed flat upon the earth, and with a kind of sensible jar; as though the animal had made "a false step." This peculiarity unfits the quadruped to trot upon stones, or hard roads, until it has learnt "to handle its feet," or to accommodate the tread to the new condition of the hoof



THE AWKWARD TREAD OF A HORSE WHEN NEWLY NEUROTOMISED.

DIVISION OF THE TENDONS.

Many horses, when standing, knuckle over to such an extent as threatens to throw them upon their knees. Others can only put the toe of the hind leg to the ground. The natural use of the limb is equally injured in each case; the fore legs of the horse support the body and the burden; the hind legs propel the carcase and the load. Both are deformed by contraction of the perforans tendon; and both deformities are generally produced by excessive labour, inducing strain; though a few cases have come to the author's knowledge of animals being born thus afflicted. When we contemplate the huge frame of the horse, it seems more than fitted for all man's ordinary purposes. But country carriers have vans proportioned only to the extent of their custom; their carts are enlarged as their trade increases; but very seldom is the power which draws the load augmented in the same proportion. The horse, so agile and so beautiful as long as it can move the cart, is esteemed to be not overweighted. It labours up-hill, and then the carrier congratulates himself that the worst of the work is over; it may be for him, but it is not for his horse. All the stress in going down hill lies upon the back sinews; the animal has to put forth all its strength to check the downward impetus of the load. It is the same with other horses in the shafts of other vehicles. Three or four animals (according to the usual English fashion) may be attached to a load; but the weight which three strengths can draw upon level ground, when descending an inequality, then, never bears equally upon the leaders.

Clap of the back sinews is a common accident with all horses. The equine delight is the pleasure of the master. So entirely is the horse the slave of man that it, by instinct, puts forth its utmost strength to attain anything in which its owner takes enjoyment. It does so regardless of its own probable sufferings. In racing, in hunting, in all kinds of pastime, the horse will strain every nerve and even burst its strong vessels, labouring only to gratify man. Who does not remember the old coaching days?—the animals then appeared happy in their vocation. A well appointed coach trotting by the White Horse Cellar was a sight to contemplate. However, follow the vehicle to the termination of the first stage. See the poor panting carcases unharnessed—

the perspiration lathering their sides—their veins swelling, their tails quivering, their nostrils jerking, and their limbs stiffened. Who, then, could regret that railroads were invented to indulge man's desire for speed? See, as the coach leaves the metropolis behind it, the cattle deteriorate. At last, behold life with swollen legs, stiff joints, and diseased feet made to draw the loaded vehicle. Who, properly regarding such a spectacle and having a heart to feel, does not rejoice that a method of travelling has at last been invented which renders the employment of the lash to overcome the agonies of breathing flesh no longer imperative?

These fast abuses induced contraction of the perforans tendon in the front legs. There is, however, this difference between contraction in the anterior and posterior extremities. One hind leg only may be affected; but the author remembers no instance of one fore leg being alone involved.

When a tendon is sprained it is usual to apply stimulating or fiery mixtures to that part, winding up the treatment with blisters and the heated iron. Notwithstanding, such measures are very

THE KNIFE EMPLOYED BY MR. VARNELL, ASSISTANT PROFESSOR AT THE ROYAL VETERINARY COLLEGE.

THE POSITION OF THE LEG WHEN THE KNIFE IS INSERTED.

seldom successful; man seems incapable of learning anything where another has to bear the torture; and he will often endure a

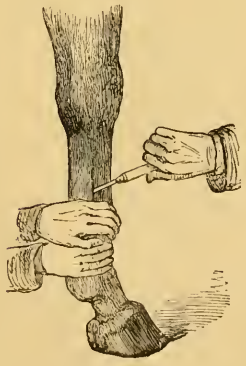
great deal of agony himself before an obvious idea can be awakened.

Such slowness is, however, very lamentable in the case of the horse. Division of the tendons was borrowed from the human surgeon by the veterinary practitioner. The operation however, till very lately, remained as it was originally adopted. At length Mr. Varnell came from America, and instructed veterinarians in an improved mode of operating, which at this date should be universally practised.

A stout knife with a probed point, a curved blade and a smooth, rounded back, is first obtained. Before the blade is inserted, the skin is divided at the point selected for the operation, by the slight puncture of a lancet. (See woodcut on preceding page.)

The leg is then flexed; the tendons are by the position of the limb rendered flaccid. The knife is next inserted sideways behind the nerve and artery, under the tendons. This last act is not, however, in practice very easy or very safe.

The edge of the knife is now towards the shoulder or haunch, and the vessels lie upon that side of the blade which is nearest to the bone. The operator now, by a simple motion of the hand, turns the cutting edge of the knife towards the posterior part of the limb. A man at the same moment takes hold of the leg and forces it straight; the perforans tendon is thus dragged against the knife, while the suspensory ligament and vessels are safe at the back of the blade. If the tendon be not divided without any effort on the part of the operator, he makes a sawing motion as he withdraws the knife. A slight sensation or a feeble sound often testifies the separation of the structure.



THE TENDON DIVIDED.

Often, if the contraction be not chronic, the strength of the extensor pedis muscle, when released from its opponent's force, is sufficient to straighten the fetlock. When the disease, however, has existed for any time, it requires some violence to break down the false attachments which have been formed. For this purpose

the knee of a strong man is placed in front of the fetlock joint, and the horse's foot is, by pulling hard, drawn forward.

The wound is then closed with a pin and twisted thread, as in neurotomy, and the animal, till junction is perfected, should be kept in the stable, as the shoe to be worn afterwards is not

THE SHOE IS TO BE WORN ONE WEEK AFTER DIVISION OF THE TENDON HAS BEEN ACCOMPLISHED.

THE SHOE TO BE PUT ON SIX WEEKS AFTER DIVISION OF THE TENDON, AND TO BE WORN UNTIL UNION IS PERFECTED.

favourable to progression. One week after the operation a shoe with a projecting piece at the toe, about one inch and a-half long, is to be put on to the foot of the diseased limb. Five weeks after this the shoe is to be replaced by one having the projecting point twice as long; and this last is to be worn till union is supposed to be perfected—till the expiration of three months, at least.

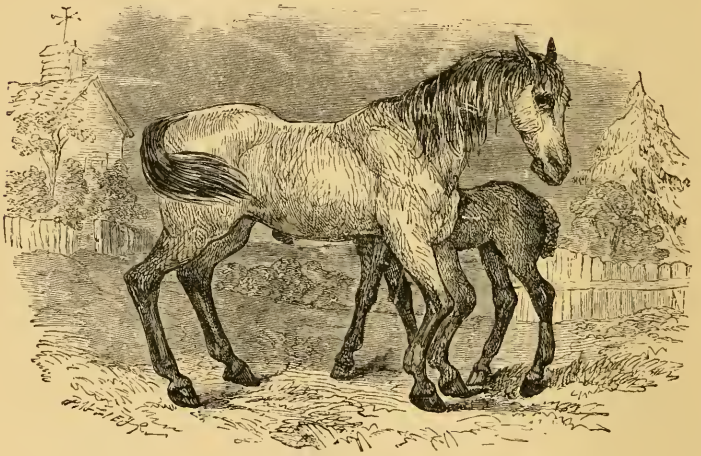
The horse after having the tendon divided is said to be as strong as ever. The author would, however, object to such an animal being put into the shafts with even a light load behind it; or to its being again used for saddle purposes. However, though forbidden these uses, it has still a large field of service open to it.

This operation is alike effectual and humane. That the last assertion may not appear based upon a single opinion, the author presents the reader with an engraving taken from a park near Lewes. That animal seemed to have all four limbs contracted, or the hind limbs were flexed and much advanced, to take the weight off the fore members. A foal ran by the side of the creature thus crippled; though it would be supposed no sane person would select such a dam to breed from.

Now, had this mare been operated upon, slight pain would have been inflicted. Tendon, unless in a state of inflammation, has no sensation. Relief would have been afforded for the remainder of the life, and though, from her make and shape,

the animal might never have held a high station among her breed, still, with straight legs, she must have been worth as much for work as with bent limbs she could be valuable for stock purposes.

The reviser has known only one horse teneotomised that was of any use afterwards. In some cases good results have been reported,



and may have continued for some time after operation; but whether they have remained permanent—the after history of these cases has never been revealed, the animals having found other owners where the cases could not be followed; but in every horse operated upon there is always a tendency to recontraction; and although shoes with long toe pieces have been affixed to the hoof so as to bring the toe forward and prevent the close approximation of the ends of the divided tendon, thickening has taken place, and nature's efforts in drawing together the disunited parts have effected it by causing contraction more marked than before operation.

LAYING OPEN THE SINUSES OF A QUITTOR.

Give no opening medicine to any horse previous to this operation. Every member of the equine race is more likely to be too low from excess of work than in any degree inflammatory from

over-indulgence. Therefore, discard the general practice of preparing the horse with a dose of compound aloes. If the bowels are costive, get them open. But before employing the drastic drug, try what bran mashes and green-meat can effect. The entire strength will be needed to repair the injuries inflicted with the knife.

Give tonics and high feeding, where the symptoms declare the body to be enervated. It is at all times better to operate upon a system having a superabundance of vital energy than upon one in which the powers are at all tardy. Collapse is the greatest enemy the surgeon has to dread. It is true animals do not, like men, often "shut up" or die while under the operator; but frequently the most skilful surgery is defeated by the horse, after it has been released from the hobbles, never thriving. There may be no disease to be detected; but the body seems to want the strength requisite for recovery. To make this apparent to the reader: suppose two gentlemen each perform neurotomy. One shall bungle, yet his patient shall do well. The wounds shall heal by the first intention, and the horse, in a fortnight, be again delighting its owner. The other shall display the perfection of scientific attainment; yet the horse shall never thrive. The wounds shall ulcerate, and the animal either gnaw the foot or cast the hoof. How can such differences be accounted for but by believing the horse is subject to a peculiar species of chronic collapse?

Rasp the quarter of the horse's foot which has quittor until the soft light coloured horn of the laminæ is exposed. Then, let the hair be cut off around the opening on the coronet, and the foot be carefully cleansed. Afterward, throw the horse. Release the quittored leg from the hobbles, and with a steel director probe each sinus. So soon as the instrument is well in, take a sharp-pointed knife and run it carefully down the groove of the director. Then ascertain with a grooved probe whether the sinus decreased in diameter, or whether the whole extent of the pipe be laid open. If the smallest portion remains to which the knife has not reached, use the groove of the probe as a director and slit it up. Do this to as many sinuses as may exist.

Next place in each sinus a small piece of tow. These pieces of tow should be already divided into short and thin skeins. They should be saturated with chloride of zinc, dissolved in spirits of

wine, one scruple to the ounce. Put one of these into each sinus, and let the horse up. In three days such of the pieces of tow as have not been removed by the sloughing process, may be taken

THE QUARTER RASPED BENEATH THE OPENING OF A QUITTOR.

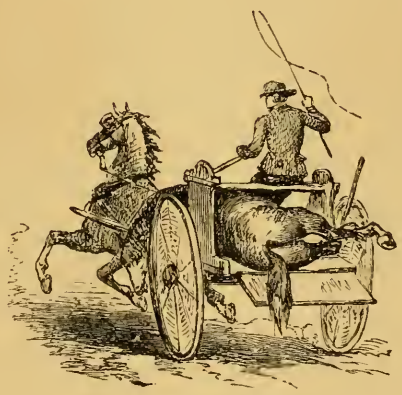
THE SINUSES OF A QUITTOR BEING OPERATED UPON.

from the wounds, and the foot simply dressed with chloride of zinc and water, one grain to the ounce, squeezed from a sponge, as in the case of open joint.

This operation, when described, reads abhorrent; but it is really most humane. It is a common thing for a horse to be three or even six months under treatment, on account of an ordinary quittor. During the entire space, the foot (the tenderest part of the horse's body) is burnt with violent caustics, and has had heated wires thrust down its sinuses. By the operation proposed, the affair is settled in a few minutes. The horse seldom evinces much sensibility while the knife is being employed; in three days the animal is so far recovered as to allow the diseased member almost to be left to nature. The horse should, however, on no account do any work before the hoof is in some measure restored. Until the outer covering of dark horn has grown down, a bar shoe, well eased off the diseased quarter, should be worn. When the hoof is reproduced, instead of false quarter or other deformities, the usual results of quittor, it is all but impossible to decide which has been the affected foot, or which was operated upon.

The author has now stated at length that treatment which the horse, for its own sake, deserves, and which, for the honour of the

being whom it serves, the animal should receive. He has, designedly, rather appealed to the reason of his readers than sought to enlist their feelings. The subject was, indeed, a wide one. Man has hitherto been too content to consider animals as something given absolutely to him, to be treated according to his sovereign will or merest pleasure. He has not reflected that when he was created Lord of this earth, he was invested with a title which had its responsibilities as well as its privileges.



ALPHABETICAL SUMMARY.

A BRIEF SUMMARY OF THE FOREGOING MATTER,

ARRANGED IN ALPHABETICAL ORDER.

—o—

This abbreviation is made for the purpose of hasty consultation, when the symptoms exhibited by the horse are so urgent, as will not allow the owner to refer to the body of the book. That, however, he is earnestly recommended to do, after the first anxiety has subsided; because, what follows is to be regarded only as notes of cases, and by no means to be viewed as a substitute for the more detailed descriptions of diseases and their treatment.

ABSCESS OF THE BRAIN.

Cause.—Some injury to the head.

Symptoms.—Dulness; refusal to feed; a slight oozing from a trivial injury upon the skull; prostration: the animal, while on the ground, continues knocking the head violently against the earth, until death ensues.

Treatment.—None of any service.

ABDOMINAL INJURIES.

Ruptured Diaphragm produces, generally, a soft cough; sitting on the haunches or leaning on the chest, with symptoms of distress.

Ruptured Spleen answers to the tests, described under "Hæmorrhage of the Liver."

Ruptured Stomach is characterised by excessive colic, followed by tympanitis.

Intro-susception possibly may be relieved by the inhalation of a full dose of chloroform; but the result is always uncertain.

Invagination is attended with the greatest possible agony.

Strangulation is not to be distinguished, during life, from invagination.

Calculus causes death by impactment; but however different the causes of abdominal injury may be, they each produce the greatest agony, which conceals the other symptoms, and makes all such injuries apparently the same while the life lasts.

ACITES, OR DROPSY OF THE ABDOMEN.

Cause.—Chronic peritonitis.

Symptoms.—Pulse, hard; head, pendulous; food, often spoiled; membranes, pallid; mouth, dry. Pressure to abdomen elicits a groan; turning in the stall calls forth a grunt. Want of spirit; constant lying down; restlessness; thirst; loss of appetite; weakness; thinness; enlarged abdomen; constipation and hide-bound. Small bags depend from the chest and belly; the sheath and one leg sometimes enlarge; the mane breaks off; the tail drops out. Purgation and death.

Treatment.—When the symptoms first appear, give night and morning—Strychnia, half-a-grain, worked up to one grain; iodide of iron, half-a-drachm, worked up to one drachm and a half; extract of belladonna, one scruple; extract of gentian and powdered quassia, of each a sufficiency; apply small blisters upon the abdomen: but if the effusion is confirmed, a cure is hopeless.

ACUTE DYSENTERY.

Cause.—Some acrid substance taken into the stomach.

Symptoms. — Abdominal pain; violent purgation; the fæces become discoloured and fœtid water; intermittent pulse; haggard countenance; the position characterises the seat of anguish. Perspiration, tympanitis, and death.

Treatment.—Give sulphuric ether, one ounce; laudanum, three ounces; liquor potassæ, half-an-ounce; powdered chalk, one ounce; tincture of catechu, one ounce; cold linseed tea, one pint. Repeat every fifteen minutes. Cleanse the quarters; plait the tail; inject cold linseed tea. The whole of the irritating substance must be expelled before improvement can take place.

ACUTE GASTRITIS.

Cause.—Poison; generally given to improve the coat.

Symptom.—Excessive pain, resembling fury.

Treatment.—Give as often and as quickly as possible the following drink:—Sulphuric ether and laudanum, of each three ounces; carbonate of magnesia, soda, or potash, four ounces; gruel (*quite cold*), one quart. Should the pulse be sinking, add to the drink carbonate of ammonia, one drachm. If corrosive sublimate is known to be the poison, one dozen raw eggs should be blended with each drench. If delirium be present, give the medicine, as directed for tetanus, with the stomach pump.

ACUTE LAMINITIS.

Cause.—Often man's brutality. Horses driven far and upon hard roads are exposed to the disorder. Any stress long applied to the foot—as, standing in the hold of a ship may generate the affection.

Symptoms.—The pace seems odd towards the end of the journey; but the horse is placed in the stable with plenty of food for the night. Next morning, the animal is found all of a heap. Flesh, quivering; eyes, glaring; nostrils, distended; and breath, jerking. Flanks, tucked up; back, roached; head, erect; mouth, closed; hind legs, advanced under the belly; fore legs, pushed forward; fore feet, resting upon the heels; and the limbs moved, as though the horse were dancing upon hot irons.

Treatment.—Put on the slings in silence. To the end of the cords append weights. Soak the feet in warm water, in which a portion of alkali is dissolved. Cut out the nails from the softened horn. Before the shoes are removed, give half-a-drachm of bella-

donna and fifteen grains of digitalis, and repeat the dose every third hour until the symptoms abate. Clothe the body; place thin gruel and green meat within reach, and let the animal at first be watched day and night.

Next morning give sulphuric ether and laudanum, of each two ounces in a pint of water. Should the pastern arteries throb, place the feet in warm water. While the affection lasts, pursue these measures; and it is a bad symptom, though not a certain one, if no change for the better takes place in five days.

ALBUMINOUS URINE.

Cause.—Unknown.

Symptoms. — These consist of the positions assumed by the horse. The legs are either stretched out or the hind feet are brought under the body. Straddling gait, and much difficulty in turning within the stall. Some urine being caught it is thick and answers to certain chemical tests.

Treatment.—Give a laxative, and apply mustard to the loins. As after measures—perfect rest, attention to diet, and repeated doses of opium.

APHTHA.

Cause.—Unknown.

Symptoms.—Small swelling on the lips; larger swellings upon the tongue. As the disease progresses, a clear liquid appears in each swelling. The bladders burst; crusts form, and the disease disappears.

Treatment.—Soft food and the following wash for the mouth: take, borax, five ounces; honey or treacle, two pints; water, one gallon. Mix.

BLOOD SPAVIN.

A disease seldom encountered at the present time.

BOG SPAVIN.

Cause.—Too exacting work.

Symptom.—A puffy swelling at the front of and at the upper part of the hock.

Treatment.—Persistent pressure, maintained by means of an india-rubber bandage, or otherwise.

BOTS.

Cause.—Eggs of the gadfly deposited on the horse's coat during the summer months, and usually when they are turned out to grass.

Treatment.—Cannot be expelled by any medicine. Wait till the following year, and the parasites will be ejected naturally.

BREAKING DOWN.

Cause.—Violent exertion—generally when racing.

Symptoms.—The horse, when going, suddenly loses power to put one leg to the ground. The foot is turned upward; pain, excessive; breathing, quickened; pulse, accelerated; appetite, lost. In time, these symptoms abate; but the leg is disabled for life.

Treatment.—Place a linen bandage round the injury, and see that this is kept constantly cold and wet; put on a high-heeled shoe, and leave the issue to nature. The animal is afterwards serviceable only to breed from.

BROKEN KNEES.

Cause.—False steps on uneven roads. Pulling in the chin to the breast, or driving with a tight bearing-rein.

Symptoms.—The horse falls; the knee may only be slightly broken, but deeply contused. A slough must then take place, and open joint may result. Or the animal may fall, and when down be driven forward by the impetus of its motion. The knee is cut by the fall, and the skin of the knee may be forced back by the onward impulse. This skin will become dirty; but the removed integument will fly back on the animal's rising, thus forming a kind of bag containing and concealing foreign matter.

Treatment.—Procure a pail of milk-warm water and a large sponge. Dip the sponge in the pail, and squeeze out the water above the knee. Continue to do this, but do not dab or sop the wound itself. The water flowing over the knee will wash away

every impurity. Then, with a probe, gently explore the bag. If small, make a puncture through the bottom of the bag; if large, insert a seton, and move it night and morning, until good pus is secreted: then withdraw the seton. "Rack" up the horse's head, and get some cold water, to every quart of which add two ounces of tincture of arnica. Pour a little of this into a saucer, and then dip a sponge into the liquid. Squeeze the sponge dry above the joint. Do this every half-hour, for three and a half days, both by day and night. If at the end of that time all is going on well, the head may be released; but should the knee enlarge and become sensitive, while the animal refuses to put the foot to the ground, withdraw the seton. Place the quadruped in slings; apply the arnica lotion until a slough takes place; then resort to the chloride of zinc lotion, one scruple to the pint, and continue to use this as has been directed. Feed liberally on oats, good chaff, and boiled carrots.

BROKEN WIND.

Cause.—Old age, prolonged work, and bad food.

Symptoms.—Short, dry, hacking cough, caused by irritability of the larynx; ravenous appetite; insatiable thirst; abundant flatus. Dung, half digested; belly, pendulous; coat, ragged; aspect, dejected. Respiration is performed by a triple effort; inspiration is spasmodic and single; expiration is laboured and double. The ribs first essay to expel the air from the lungs; these failing, the diaphragm and abdominal muscles take up the action. Broken wind can be set or concealed for a time, by forcing the animal to swallow quantities of grease, tar, or shot. A drink of water, however, will always reproduce the symptoms.

Treatment.—No cure. Relief, alone, is possible. Always allow plenty of water; let it always be within easy access of the horse. Remove the bed in the day; muzzle at night; put a lump of rock salt and of chalk in the manger. Never push hard or take upon a very long journey.

BRONCHITIS.

Causes.—Riding far and fast; then leaving exposed, especially to the night air; neglect and constitutional liability.

Symptoms.—Appetite, often not affected—sometimes it is increased. A short cough, in the first instance; breathing, only excited; legs, warm; mouth moist, and nasal membrane merely deeper colour during the early stage. When confirmed, the appetite is lost; the horse is averse to move; the cough is sore and suppressed; the breathing is audible; the membranes are scarlet; the mouth is hot and dry; the legs are cold; the body is of uneven temperatures.

Treatment.—Do not deplete. Place in a large loose box; fill the place with steam; apply scalded hay to the throat; fix flannels, wet with cold water, to the back and side, by means of a Mackintosh jacket. When the flannel becomes warm, change it immediately. Do this for two hours. After that space the flannel may remain on, but must not become dry. Prepare half-a-pound of melted Burgundy pitch, and stir into it two ounces of powdered camphor, with half-a-drachm of powdered capsicums. Apply the mixture to the throat. To restore tone to the pulse, give every half-hour sulphuric ether and laudanum, of each one ounce; water, one pint. If no effect be produced by three of these drinks, substitute infusion of aconite, half-an-ounce; extract of belladonna, half-a-drachm, rubbed down in water, a quarter of a pint. When the pulse has recovered, resume the former physic, only adding half-a-drachm of belladonna to each dose. Support with gruel. Introduce food gradually; "chill" the water; be careful of hay; and mind, when given, it is thoroughly damped.

BRONCHOCELE.

Symptom.—An enlargement on the side of the throat.

Treatment.—Give the following, night and morning:—Iodide of potassium, half-a-drachm; liquor potassæ, one drachm; distilled water, half-a-pint. Also, rub into the swelling the accompanying ointment:—Iodide of lead, one drachm; simple cerate, one ounce.

BRUISE OF THE SOLE.

Cause.—Treading on a stone, or some projecting body.

Symptom.—Effusion of blood into the horny sole.

Treatment.—Cut away the stained horn, and shoe with leather.

CALCULI.

Causes.—Unknown.

Symptoms of Renal Calculus.—Urine, purulent, thick, opaque, gritty, or bloody; back, roached. Pressure on the loins occasions shrinking; the arm in the rectum and the hand carried upwards, provokes alarm.

Treatment.—Two drachms of hydrochloric acid in every pail of water; but the result is dubious.

Symptoms of Cystic Calculus.—Same states of urine as in renal calculus. The water, when flowing forth, is suddenly stopped; every emission is followed by straining; the back is hollowed; the point of the penis is sometimes exposed; and, when going down hill, the animal often pulls up short.

Treatment of Cystic Calculus.—Examine per rectum. An operation for the horse, or Mr. Simmonds' instrument for the mare, is imperative. When the stone is small, hydrochloric acid may be tried.

Symptoms of Urethral Calculus.—Suppression of urine; great suffering. If the urethral calculus is impacted in the exposed portion of the urethra, the passage is distended behind the stoppage.

Treatment of Urethral Calculus.—Cut down upon and remove the substance.

CANKER.

Cause.—Old horses, when "turned out" for life as pensioners; aged and neglected animals will also exhibit the disease.

Symptoms.—Not much lameness. The disease commences at the cleft of the frog; a liquid issues from the part, more abundant and more abominable than in thrush; it often exudes from the commissures joining the sole to the frog. The horn firstly bulges out; then it flakes off, exposing a spongy and soft substance, which is fungoid horn. The fungoid horn is most abundant about the margin of the sole, and upon its surface it flakes off. This horn has no sensation. The disease is difficult to eradicate when one fore foot is involved. When all four feet are implicated, a cure is

all but hopeless, and the treatment is certain to be slow and vexatious.

Treatment.—See the stable is large, clean, and comfortable; note that the food is of the best; allow liberal support; pare off the superficial fungoid horn, and so much of the deep-seated as can be detached. Dust on to the diseased parts some of the following:—Chloride of zinc, half-an-ounce; flour, four ounces. Put on the foot without water. To the sound hoof apply chloride of zinc, four grains; flour, one ounce. Cover the sound parts before the cankered horn is dressed; tack on the shoe; pad well and firmly. When places appear to be in confirmed health, the following may be used:—Chloride of zinc, two grains; flour, one ounce. At first, dress every second day; after a time, every third day, and give exercise as soon as possible. Always keep the diseased foot dry, as the slightest moisture to the part retards the progress of cure.

CAPPED ELBOW.

Cause.—Injury to the point of the elbow.

Symptom.—It is often of magnitude; and is liable to ulcerate and become sinuous.

Treatment.—The same as capped hock.

CAPPED HOCK.

Cause.—Any injury to the point of the calcis.

Symptom.—A round swelling on the point of the hock which, should the cause be repeated, often becomes of great size.

Treatment.—If small, hand-rub the tumour constantly, for a few days. Should the capped hock be of magnitude, dissect out the enlargement, without puncturing it. Treat the wound with the lotion of chloride of zinc, one grain to the ounce of water, and it will heal after some weeks.

CAPPED KNEE.

Cause.—The same as the previous affection.

Symptom.—A soft tumour in front of the knee.

Treatment.—If let alone, it would burst, and leave a permanent

blemish. Draw the skin to one side, and with a lancet pierce the lower surface of the tumour. Treat the wound as an open joint.

CATARACT.

Cause.—Looking at white walls, or receiving external injuries. Specific ophthalmia generates a permanent cataract.

Symptoms.—When partial, shying; if total, white pupil and blindness.

Treatment.—Colour the inside of the stable, green,—as cataract, when not total, is sometimes absorbed.

CHOKING.

Causes.—Something impacted in the gullet; either high up or low down.

Symptoms.—High Choke.—Raised head; saliva; discharge from the nostrils; inflamed eyes; haggard countenance; audible breathing. The muscles of neck tetanic; the flanks heave; the fore feet paw and stamp; the hind legs crouch and dance; perspiration; agony excessive. Low Choke.—The animal ceases to feed; water returns by the nostrils; countenance expresses anguish; saliva and nasal discharge; laboured but seldom noisy breathing; roached back; tucked up flanks, while the horse stands as though it were desirous of elevating the quarters.

Treatment.—Make haste when High Choke *is present.*—Insert the balling-iron, or, with a hook extemporised out of any wire, endeavour to remove the substance from the throat. If the choking body is too firmly lodged to be thus removed, sulphuric ether must be inhaled to relax the spasm. The ether not succeeding, an egg is probably impacted. Destroy its integrity with a darning needle carefully inserted through the skin; then break the shell by outward pressure. Low Choke.—Relief should be at once given by passing a probang through the gullet, and steadily pressing the impaction into the stomach, and drawing it away.

Subsequent to the removal, feed with caution.

CHRONIC DYSENTERY.

Cause.—Not well understood; generally attacks old horses belonging to penurious masters.

Symptoms.—Purging without excitement; always upon drinking cold water; violent straining; belly enlarges; flesh wastes; bones protrude; skin, hidebound; membranes, pallid; weakness; perspiration; standing in one place for hours. At last the eyes assume a sleepy, pathetic expression; the head is slowly turned towards the flanks; remains fixed for some minutes; the horse only moves when the bowels are about to act; colic; death.

Treatment.—Give thrice, daily, crude opium, half-an-ounce; liquor potassæ, one ounce; chalk, one ounce; tincture of allspice, one ounce; alum, half-an-ounce; ale, one quart. Should the horse belong to a generous master, give one of the following drinks thrice daily, upon the symptoms being confirmed; sulphuric ether, one ounce; laudanum, three ounces; liquor potassæ, half-an-ounce; powdered chalk, one ounce; tincture of catechu, one ounce; cold linseed tea, one pint. Or, chloroform, half-an-ounce; extract of belladonna, half-a-drachm; carbonate of ammonia, one drachm; powdered camphor, half-a-drachm; tincture of oak-bark, one ounce; cold linseed tea, one pint. Feed lightly; dress frequently; give a good bed and a roomy lodging.

CHRONIC GASTRITIS.

Symptoms.—Irregularity of bowels and appetite; pallid membranes; mouth cold; a dry cough; tainted breath; sunken eye; catching respiration; pendulous belly; ragged coat and emaciation. Sweating on the slightest exertion; eating wood-work or bricks and mortar.

Treatment.—Do not purge; administer bitters, sedatives, and alkalies. Give powdered nux vomica, one scruple; carbonate of potash, one drachm; extract of belladonna, half-a-drachm; extract of gentian and powdered quassia, of each a sufficiency. Or give strychnia, half-a-grain; bicarbonate of ammonia, one drachm; extract of belladonna, half-a-drachm; sulphate of zinc, half-a-drachm; extract of gentian and powdered quassia, of each a sufficiency. Give one ball night and morning; when these balls seem to have lost their power, give half-an-ounce each of liquor arsenicalis and tincture of ipecacuanha, with one ounce of muriated tincture of iron and laudanum in a pint of water; damp the food;

sprinkle magnesia on it. As the strength improves, give sulphuric ether, one ounce; water, one pint, daily.

CHRONIC HEPATITIS.

Causes.—Too good food and too little and irregular work.

Symptoms.—Cold mouth; pallid membranes; white of eyes, ghastly, displaying a yellow tinge; looks towards the right side; the right side may be tender for a long time, with generally repeated attacks of this nature, although the horse may perish with the first fit.

Treatment.—Hold up the head, and if the horse staggers this proves hæmorrhage from the liver. Give sufficiency of nutritious food, but only enough of it; plenty of labour, and the following physic:—Iodide of potassium, two ounces; liquor potassæ, one quart. Dose, night and morning, two table-spoonfuls in a pint of water.

CLAP OF THE BACK SINEWS.

Cause.—Severe exertion.

Symptoms.—The maimed limb is flexed; the toe rests upon the ground. In a short space, a tumour appears; it is small, hot, soft, and tender, but soon grows hard. Great pain, but attended with few constitutional symptoms.

Treatment.—Administer physic. Put a linen bandage on the leg; keep this constantly wet until the primary symptoms abate. Cut grass for food while fever exists; continue the cold water till recovery is confirmed. The horse will not be fit to work for many months.

COLD.

If mild, a little green meat, a few mashes, an extra rug and a slight rest, generally, accomplishes a cure.

Symptoms of severe cold are dulness; a rough coat; the body of different temperatures; the nasal membrane, deep scarlet, or of a leaden colour; the appetite is lost; simple ophthalmia; tears; the sinuses are clogged, and a discharge from the nose appears.

Treatment — Give no active medicine. Apply the steaming nose-bag six times, daily; allow cut grass and mashes for food, with gruel for drink. If weak, present three feeds of crushed and scalded oats and boiled carrots, daily. Good nursing, with pure air, warmth, and not even exercise, till the disease abates, are of more importance than "doctor's stuff" in a case of severe cold. Cold, however, often ushers in other and more dangerous diseases.

CONGESTION IN THE FIELD.

Cause.—Riding a horse after the hounds when out of condition, or any cause calculated to devitalise the system.

Symptoms.—The horse, from exhaustion, reels and falls. The body is clammy cold; the breathing is laboured; every vein is turgid.

Treatment.—Cover the body; lead gently to the nearest stable; keep hot rugs upon the animal; bandage the legs and hood the neck; warm the place, either by a fire or tubs full of hot water. Give, without noise, every half-hour, one ounce of sulphuric ether, half-an-ounce of laudanum, half-a-pint of cold water. Should no chemist be near, give half-a-pint of any spirit in a pint of water,—or, much better, two drachms of carbonate of ammonia in a pint of strong ale. Allow an ample bed, and place a pail of gruel within easy reach of the horse. Do not leave the animal for thirty hours, as in that time its fate will be decided.

CONGESTION IN THE STABLE.

Cause.—A debilitated, fat horse, unused to work, being driven fast, with a heavy load behind it.

Symptoms.—Hanging head; food not glanced at; blowing; artery gorged and round; pulse feeble; cold and partial perspirations; feet cold; eye fixed; hearing lost, and the attitude motionless.

Treatment.—Give, immediately, two ounces each of sulphuric ether and of laudanum in a pint of cold water. Give the drink with every caution. In ten minutes repeat the medicine, if necessary. Wait twenty minutes, and give another drink if

requisite; more are seldom needed. Take away all solid food, and allow gruel for the remainder of the day.

CORNS.

Cause.—In a flat foot, the heels of the coffin bone squeeze the sensitive sole by pressing it against the shoe. In a contracted foot, the sensitive sole is squeezed between the wings of the coffin bone and the thick horny sole. A bruise results; blood is effused; and the stain of this left upon the horny sole—generally upon the inner side and anterior to the bars—constitutes a horse's corn, which is mostly found on the fore feet.

Symptoms.—If the stain is dark, and is to be removed with the knife, this indicates a corn has been but no longer exists. The smallest stain of bright scarlet testifies to the existence of a new and present corn. Corns are of four kinds: the old, the new, the sappy, and the suppurative. The old and new are produced by the blood, and are judged by the scarlet or dark-coloured stain. The old is generally near the surface—the new is commonly deep-seated. The sappy is, when the bruise is only heavy enough to effuse serum. The new corn alone produces lameness. The suppurating corn may start up from either of the others receiving additional injury. It causes intense pain and produces acute lameness.

Treatment.—Cut out the stain. If a suppurating corn, place the foot in a poultice, after having opened the abscess. Then, the horn being softened, cut away all the sole which has been released by the pus from its attachment to the secreting surface. Tack on an old shoe, and dress with the solution of the chloride of zinc, one grain to the ounce. Afterward shoe with leather, and employ stopping, to render the horn plastic.

COUGH.

Causes.—Foul stables; hot stables; coarse, dusty provender; rank bedding; irregular work,—while the affection may attend many diseases.

Treatment.—Crush the oats; damp the hay; give gruel or linseed tea for drink. Clothe warmly and give, thrice daily,

half-a-pint of the following in a tumbler of water:—Extract of belladonna, one drachm, rubbed down in a pint of cold water; tincture of squills, ten ounces; tincture of ipecacuanha, eight ounces. No change ensuing, next try:—Barbadoes, or common tar, half-an-ounce; calomel, five grains; linseed meal, a sufficiency. Make into a ball, and give one night and morning. This being attended with no improvement, employ:—Powdered aloes, one drachm; balsam of copaiba, three drachms; cantharides, three grains; common mass, a sufficiency. Mix, and give every morning.

A daily bundle of cut grass is good in the spring of the year. A lump of rock salt has been beneficial. If the animal eats the litter, muzzle it. Roots are good. Moisten the hay; and, above all things, attend to the ventilation of the stable.

CRACKED HEELS.

Cause.—Cutting the hair from the heels, and not drying the legs immediately after work.

Symptoms.—Thickened skin; cracks, and sometimes ulceration.

Treatment. — Wash; dry thoroughly; apply the following wash: — Animal glycerine, half-a-pint; chloride of zinc, two drachms; strong solution of oak bark, one pint. Mix. If ulceration has commenced, rest the horse. Give a few bran mashes or a little cut grass, to open the bowels. Use the next wash:— Animal glycerine, or phosphoric acid, two ounces; permanganate of potash, or creosote, half-an-ounce; water, three ounces. Apply six times daily. Give a drink each day, composed of liquor arsenicalis, half-an-ounce; tincture of muriate of iron, one ounce; water, one pint.

CRIB-BITING.

Cause.—Stomach affection, induced by sameness of food and indigestion.

Symptoms.—Placing the upper incisors against some support and, with some effort, emitting a small portion of gas.

Treatment.—Place a lump of rock salt in the manger; if that is not successful, add a lump of chalk. Then damp the food, and

sprinkle magnesia upon it; and mingle a handful of ground oak bark with each feed of corn. Purify the ventilation of the stable before these remedies are applied.

CURB.

Causes.—Galloping on uneven ground; wrenching the limb; prancing and leaping.

Symptom.—A bulging out at the posterior of the hock, accompanied by heat and pain,—often by lameness.

Treatment.—Rest the animal. Put on an india-rubber bandage (see p. 329), and under it a folded cloth. Keep the cloth wet and cool with cold water. When all inflammation has departed, blister the hock.

CYSTITIS, OR INFLAMMATION OF THE BLADDER.

Causes.—Kicks and blows under the flank. Abuse of medicine and bad food, with the provocatives generally of nephritis.

Symptoms.—Those common to pain and inflammation. Urine, however, affords the principal indication. At first, it is at intervals jerked forth in small quantities. Ultimately, it flows forth constantly, drop by drop. A certain, but a dangerous test, is to insert the arm up the rectum, and to feel the small and compressed bladder. A safer test, is to press the flank, which, should cystitis be present, calls forth resistance.

Treatment.—Give scruple doses of aconite, should the pulse be excited; the same of belladonna, should pain be excessive; and calomel with opium, to arrest the disease. Place under the belly, by means of a rug, a cloth soaked with strong liquor ammonia diluted with six times its bulk of water. Or apply a rug dipped into hot water, or loaded with cold water; change when either becomes warm.

DIABETES INSIPIDUS, OR PROFUSE STALING.

Causes.—Diuretic drugs or bad food.

Symptoms.—Weakness; loss of flesh; loss of condition.

Treatment.—Do not take from the stable; keep a pail of linseed tea in the manger; give no grass or hay; groom well. Order a ball, composed of iodide of iron, one drachm; honey and linseed-meal, a sufficiency. Or a drink consisting of phosphoric acid, one ounce; water, one pint. Give the ball daily; the drink at night and at morning.

ENTERITIS.

Causes.—Greatly conjectural. Prolonged colic may end in it. Constipation may induce it.

Symptoms.—Dulness; heaviness; picks the food; shivers repeatedly; rolling; plunging; kicking—but more gently than in spasmodic colic. Quickened breathing; hot, dry mouth; wiry pulse. Pressure to the abdomen gives pain. Remove your coat; insert the arm up the anus. If the intestines are very hot, all is confirmed.

Treatment.—Give aconite, in powder, half-a-drachm; sulphuric ether, three ounces; laudanum, three ounces; extract of belladonna, one drachm (rubbed down in cold water, one pint and a half). As the pulse changes, withdraw the aconite; as the pain subsides, discontinue the belladonna. The other ingredients may be diminished, as the horse appears to be more comfortable. Should the pain linger, after the administration of the eighth drink, apply an ammoniacal blister. Feed very carefully, upon recovery,—avoiding all things purgative or harsh to the bowels.

EXCORIATED ANGLES OF THE MOUTH.

Cause.—Abuse of the reins and too severe bits.

Treatment.—Apply the following lotion to the part:—Chloride of zinc, two scruples; essence of aniseed, two drachms; water, two pints.

FALSE QUARTER.

Cause.—Injury to the coronet, producing an absence of the secreting coronet of the crust.

Symptoms.—No lameness, but weakness of the foot. The soft horn of the laminæ being exposed is apt to crack. Bleeding

ensues. Sometimes granulations sprout, when the pain and the lameness are most acute.

Treatment.—In cases of crack and granulations, treat as is advised for sandcrack. Put on a bar shoe, with a clip on each side of the false quarter. Pare down the edges of the crack, and ease off the point of bearing on the false quarter. A piece of gutta-percha, fastened over the false quarter, has done good.

FARCY.

Cause.—Excessive labour, bad food, and filthy stables; caused by ineffective drainage and imperfect ventilation, operating upon old age.

Symptoms.—It is at first inflammation of the superficial absorbents. Lumps appear on various parts. If these lumps are opened, healthy matter is released; but the place soon becomes a foul ulcer, from which bunches of fungoid granulations sprout. From the lumps may be traced little cords leading to other swellings. The appetite fails—or else it is voracious. Matter may be squeezed through the skin. Thirst is torturing. At length, glanders breaks forth and the animal dies. There is a smaller kind of farcy, called button farcy—the smaller sort is the more virulent of the two.

Cure.—Prevention—no cure.

FISTULOUS PAROTID DUCT.

Cause.—Hay-seeds or rather substances getting into the mouth of the duct during mastication. Stones being formed within the canal. The stable-fork in the hand of an intemperate groom.

Symptoms.—The duct greatly enlarges behind the obstacle, and, becoming swollen, prevents the secretion from entering the mouth. Great agony is occasioned by every mouthful masticated. The duct bursts, and a fistulous opening is established, through which the saliva jerks at each motion of the jaw. From the absence of a secretion important to digestion the flesh wastes, and the animal soon assumes a miserable appearance.

Treatment.—Make an adhesive fluid with gum mastic and

spirits of wine; or with india-rubber and sulphuric ether. When the horse is not feeding, pare the hardened edges from the wound; cover the orifice with a piece of strained india-rubber; over this put a layer of cotton; fasten one end to the horse's cheek by means of the adhesive fluid; that having dried, fasten the other end tightly down. Place other layers of cotton over this, allowing each layer to cross the other, and fastening all to the cheek. Fasten the head to the pillar-reins; allow the horse to remain till the cotton falls off, and only give gruel for food. Put tan under the feet; and should the first trial not succeed, repeat it.

FISTULOUS WITHERS.

Cause.—External injury, generally the lady's saddle, which bruises one of the bursæ placed above the withers.

Symptoms.—When first done, a small round swelling appears on the off side. If this is neglected, the place enlarges and numerous holes burst out, which are the mouths of so many fistulous pipes.

Treatment.—In the early stage go to the horse's side, impale the tumour and divide it. Touch the interior with lunar caustic; keep the wound moist with the chloride of zinc lotion, one grain to the ounce of water, and cover it with a cloth dipped in a solution of tar. If the sinuses are established, make one cut to embrace as many as possible. Clean out the corruption. Scrape or cut off any black or white bone which may be exposed. Cover with a cloth, and keep wet with the solution of chloride of zinc. Should there exist a long sinus leading from the withers to the elbow, insert a seton by means of the guarded seton needle. This seton should be withdrawn so soon as a stream of creamy pus is emitted.

FUNGOID TUMOURS IN THE EYE.

Cause.—Unknown.

Symptoms.—Blindness; a yellow metallic appearance to be seen in the eye.

Treatment.—None of any service.

GLANDERS.

Cause.—Insanitary condition of stables fosters the existence of this contagious malady, or more properly of that parasitic life which causes it.

Symptoms.—Staring coat; lungs or air passages always affected; flesh fades; glands swell; spirits, low; appetite, bad. A lymphatic gland adheres to the inside of the jaw; the membrane inside the nose ulcerates; a slight discharge from one nostril. This becomes thicker, and adheres to the margin of the nostril exhibiting white threads and bits of mucus; then it changes to a full stream of foul pus; next, the nasal membrane grows dull and dropsical; the margins of the nostrils enlarge; the horse breathes with difficulty; the discharge turns discoloured and abhorrent; farcy breaks forth, and the animal dies of suffocation.

Treatment.—Prevention—no cure.

GREASE.

Cause.—Age; debility; excessive labour; neglect; filth. Cutting the hair off the heels, and not drying legs immediately on return from work.

Symptoms.—Scurfiness and itchiness of the legs. Rubbing the leg with the hoof of the opposite limb; hairs stand on end; moisture exudes, and hangs upon the hairs in drops. Smells abhorrently; lameness; cracks on the skin; swelling; ulceration; thin discharge; worse odour. Lameness increases; leg enlarges; granulations sprout in ragged bunches; their points harden, and become like horn; pain, excessive; horn of hoof grows long.

Treatment.—Cut off all remaining hair. If hot and scurfy, cleanse with mild soap and hot, soft water; saturate a cloth with the following lotion:—Animal glycerine, half-a-pint; chloride of zinc, half-an-ounce; water, six quarts. Lay it upon the leg. When this cloth becomes warm, remove it, and apply another, also wet with the lotion; thus continue applying cool cloths to the limb till the heat abates; afterwards moisten the leg thrice daily. When cracks and ulceration are present adopt the wet cloths; but subsequently use one of the following to the sores:—Permanganate of potash or phosphoric acid, one pint; water, six quarts. Or chloride

of zinc, one ounce; water, one gallon: employ thrice daily. If the granulations have sprouted, remove them with a knife in three operations (*full directions are given in the book*); likewise, always place in a loose box. Feed liberally; give a handful of ground oak-bark with each feed of oats. Night and morning exhibit liquor arsenicalis, one ounce; tincture of muriate of iron, one ounce and a half; porter or stout, one quart; one pint for the dose. Chopped roots, speared wheat, hay-tea, cut grass, and exercise are all good for grease.

GUTTA SERENA.

Cause.—Over-exertion and constitutional debility.

Symptoms.—Fixed dilatation of the pupil; a greenish hue of the eye; total blindness. Active ears; restless nostrils; head erect; high stepping; occasionally, a rough coat in summer and a smooth coat in winter.

Treatment.—No remedy is possible.

HEART DISEASE.

Cause.—Oft-repeated severe physical exertion, especially at racing pace.

Symptoms.—Auscultation. The beat of the heart to be seen externally; haggard countenance; pulse feeble; heart throbs; the beat of the carotid artery is to be felt; the regurgitation in the jugular is to be seen. The appetite is sometimes ravenous—often fastidious; the breathing is not accelerated excepting during pain; lameness of one leg; dropsical swellings; stopping short when on a journey; averse to turn in the stall; noises; yawns; sighs. Death always unexpected. No treatment is of any use.

HIDE-BOUND.

Cause.—Neglect, result of debilitating disease.

Treatment.—Liberal food, clean lodging, soft bed, healthy exercise, and good grooming. Administer daily two drinks, composed of—Liquor arsenicalis, half-an-ounce; tincture of muriate of iron, one ounce; water, one pint. Mix, and give as one dose.

HIGH-BLOWING AND WHEEZING.

Habits which admit of no remedies.

HÆMATURIA, OR BLOODY URINE.

Cause.—Induced by the nature and quality of food, especially when indigestible.

Symptoms.—Discolorisation of the fluid. When the bleeding is copious, breathing is oppressed; the pupils of the eyes are dilated. Pulse is lost; head is pendulous; membranes are pale and cold. Lifting up the head produces staggering. Back, roached; flanks, tucked up; legs wide apart.

Treatment.—Be gentle. Act upon the report given. Give acetate of lead, two drachms, in one pint cold water. Or as a ball, if one can be delivered. In a quarter of an hour repeat the dose, adding laudanum, one ounce, or powdered opium, two drachms. Repeat the physic until one ounce of acetate of lead has been given. Leave the horse undisturbed for two hours if the symptoms justify delay. If not, dash pailfuls of cold water upon the loins from a height. Give copious injections of cold water. Pour half-a-pint of boiling water upon four drachms of ergot of rye. When cold, add laudanum, one ounce, and dilute acetic acid, four ounces. Give two of these drinks, and two cold enemas of twenty minutes' duration. Suspend all treatment for eight hours, when the measures may be repeated. (*For after proceedings, see the article which is presented in the body of the book.*)

RABIES.

Cause.—Bite of any rabid animal.

Symptoms.—The horse is constantly licking the bitten place. A morbid change takes place in the appetite. Eager thirst, but inability to drink, or spasm at the sound or sight of water is exhibited. Nervous excitability. Voice and expression of countenance altered. More rarely, the horse (when taken from the stable) appears well. While at work, it stops and threatens to fall. Shivers violently, and is scarcely brought home when the savage stage commences. The latter development consists in the utmost ferocity, blended with a most mischievous cunning, or a malicious pleasure in destruction.

Treatment.—No remedy known. Confine in a strong place and shoot immediately.

HYDROTHORAX.

Cause.—The result of pleurisy, or inflammation of the membrane lining the chest.

Symptoms.—The horse is left very ill. The next morning the animal is looking better; the pain has abated; the eye is more cheerful; but the flanks heave. A man is procured; he is told to strike the chest when the person listening on the other side says "now." The word is spoken, and a metallic ring follows. The pulse is lost at the jaw; the heart seems to throb through water. The horse has hydrothorax!

Treatment.—The first thing is to draw off the fluid. A spot between the eighth and ninth ribs is chosen, and the skin is pulled back; a small slit through the skin is made; into that opening an armed trochar is driven. When there is no resistance felt, the thorax has been entered; the stilet is withdrawn, and the water flows forth. Use a fine trochar; take all the fluid you can obtain. Should the horse appear faint, withdraw the cannula, and in two hours again puncture the chest. Afterwards the food must be prepared, and a ball administered night and morning, consisting of iodide of iron, one drachm; strychnia, half-a-grain; sulphate of zinc, half-a-drachm; extract of gentian and powdered quassia, a sufficiency.

IMPEDIMENT IN THE LACHRYMAL DUCT.

Cause.—A hay-seed or other substance getting into and becoming swollen within the duct.

Symptom.—Swollen lid and copious tears.

Treatment.—Inject, forcibly, a stream of water up the duct.

INFLUENZA.

Cause.—Epizootic; is generated in closely confined and ill-ventilated stables.

Symptoms.—Weakness and stupidity; local swellings; heat and pain in the limbs. Loss of appetite; rapid wasting; every part of the body is diseased. Youth most exposed, but no age exempt. Spring time the general season, but an attack may

ensue at any period of the year. The following symptoms are somewhat uncertain. Pendulous head; short breath; inflamed membranes; swollen lips; dry mouth; enlarged eye-lids; copious tears; sore throat; tucked-up flanks; compressed tail; filled legs; big joints; lameness, and hot feet. Auscultation may detect a grating sound at the chest or a noise, like brickbats falling down stairs, within the windpipe. When the last is audible, there is always a copious discharge. Sometimes one foot is painful; purgation has been seen; but constipation is generally present, and the horse usually stands throughout the disease. Always suspect influenza when it is in the neighbourhood, and the membranes are yellow or inflamed.

Treatment.—Move to a well-littered, warm loose box. Suspend a pail of gruel from the wall; and give twice daily sulphuric ether, one ounce; laudanum, one ounce; water, half-a-pint. When the pulse loses all wiry feeling, and the discharge becomes copious, give, from the hand, some bread on which there is a little salt. Beware of purgatives or active treatment.

INJURIES TO THE JAW.

Causes.—Pulling the snaffle; abuse of the bit; too tight a curb-chain.

Symptoms.—Discolorisation before or behind the tush; bruise under the tongue, or upon the roof of the mouth; tumour and bony growth upon the margin of the lower jaw.

Treatment.—Cut upon the discolorisation till the knife reaches the bone; if fœtor is present, inject the chloride of zinc lotion; keep the wounds open, that the injured bone may come away.

LACERATED EYELID.

Cause.—Nails in the gangway, or the horses playfully snapping at each other.

Treatment.—Bathe with cold water till the bleeding ceases; then bring the separated parts together with sutures, place the horse in the pillar-reins till the healing is perfected.

LACERATED TONGUE.

Cause.—Sticking to a horse when giving physic; making a "chaw" of the halter rope.

Treatment.—Insert no sutures; if the arteries are excised, cut off the hanging portion of the tongue; should the vessels have escaped, allow all to remain; feed on gruel and soft food; after every meal wash out the mouth with the solution ordered for aphtha, or with the chloride of zinc lotion.

LAMPAS.

No such disease. The perfection of anatomical construction has been mistaken by ignorance for enlargement of the bars.

LARYNGITIS.

Cause—Foul stables.

Symptoms.—Dulness; enlargement over the larynx; stiff neck; short and suppressed cough. Breathing hurried and catching; pulse full; nasal membrane almost scarlet.

Treatment.—Give drachm doses of tincture of aconite in wine-glasses of water every half-hour, to amend the pulse. Put on a steaming nose-bag, and keep it almost constantly applied to amend the breathing. Fix some hay, soaked in boiling water, upon the throat, by means of an eight-tailed bandage. Give very carefully the following drink, thrice daily:—Infusion of squills, two ounces; infusion of ipecacuanha, two ounces; infusion of aconite, half-an-ounce; extract of belladonna, one drachm, rubbed down with a pint of warm water. Place in a cool, well-aired, thickly-littered loose box; bandage the legs; clothe the body; give only gruel for food, changing it thrice daily. On improvement, a little moist food may be allowed. When improvement is confirmed, put a seton under the throat. Blister the throat; pick and damp the hay; sift, bruise, and scald the oats. Employ no lowering agents.

LARVA IN THE SKIN.

Causes.—Turning out to grass. The fly lays its eggs upon the hair—the warmth of the body hatches it—and the larva enters the

skin. The next summer a tolerably large abscess is established, the insect occupying its centre.

Treatment.—With a lancet open the abscess, and squeeze out the larva. Dab the wound with a lotion made of chloride of zinc, one grain; water, one ounce.

LICE.

Causes.—Filth and debility.

Treatment.—Wash with soft soap and carbolic acid, and feed on a liberal diet.

LAMINITIS (SUB-ACUTE).

Causes.—Age, long standing in the stable, over-work.

Symptoms.—First noticed, by the manner of going upon the heels of the fore feet.

Treatment.—Get into the slings. Remove the shoes. If costiveness is present, open the bowels with green meat, but do not purge. Allow two drinks per day, each consisting of one ounce of sulphuric ether and water, half-a-pint. Half-drachm doses of belladonna, to allay pain. Feed on sound crushed oats, chopped carrots, and good chaff. No limit to this food; but five feeds to be given if the horse will eat so much.

LUXATION OF THE PATELLA.

Causes.—Constitutional weakness, sudden and violent exertion.

Symptoms.—The horse stops short, and has one of the hind legs extended backwards. A swelling upon the outer side. The pastern is flexed; the head raised; and the animal in great pain. In colts it will sometimes appear upon the slightest cause.

Treatment.—For colts, any flurry may restore the bone; but feed well to eradicate the weakness. For horses, get into a shed, and throwing a rope, one end of which has been fixed to the pastern, have the leg dragged forward, while some one pushes the bone into its place. A man should be put to keep the bone in its situation for some hours. Give strengthening food, and do not use for six weeks subsequently.

MALLENDERS AND SALLENDERS.

Cause.—Neglect.

Symptoms.—Scurf upon the seats of flexion; mallenders at the back of the knee, and sallenders at the front of the hock.

Treatment.—Cleanliness. Give the liquor arsenicalis drink, recommended for grease; change the groom. Rub the parts with this ointment:—Animal glycerine, one ounce; mercurial ointment, two drachms; powdered camphor, two drachms; spermaceti, one ounce. If cracks appear, treat as though cracked heels were present.

MANGE.

Causes.—Starvation; bad lodging and no grooming; renders the horse's skin a habitat favourable to parasitic life.

Symptoms.—Scurf about the hairs of the mane. The hair falls off in patches; the skin is corrugated. A few hairs remain upon the bare places, and these adhere firmly to the skin. Scrubbing the body against posts; sores and crusts. To test its presence, scratch the roots of the mane, and the horse will exhibit pleasure.

Treatment.—Place the horse in the sunshine, or in a heated house for one hour. Then whisk thoroughly, to remove scurf and scabs. Then rub in the following liniment:—Animal glycerine, two parts; oil of tar, two parts; oil of turpentine, half a part; oil of juniper, half a part. Mix. Leave on for two days; wash; anoint again; wash, anoint, and wash once more, always leaving the liniment on for two clear days.

MEGRIMS.

Cause.—Cerebral congestion, sometimes due to the presence of tumours.

Symptoms.—The horse suddenly stops; shakes the head; strange stubbornness may be exhibited, followed by a desire to run into dangerous places. Then ensues insensibility, accompanied by convulsions.

Treatment.—Throw up on the first fit. Give a long rest, and try to amend constitution.

MELANOSIS.

Cause.—Concentration of pigment, the black colouring matter of the skin. The disease only attacks grey horses whilst becoming white.

Symptoms.—It appears as a lump, of uncertain form, size, and situation. The swelling, if cut into, discloses a cartilaginous structure, dotted here and there with black spots. Do not use the knife, unless the swelling impedes the usefulness, or should be peculiarly well placed for operation. Feel the tail. A pimple on the dock is an almost certain sign of melanosis, which disease affects the internal organs even more virulently than it attacks the external parts. As melanosis proceeds, all spirit departs; and the animal is at length destroyed as utterly useless.

Treatment.—Let the tumour alone. Forbid all use of the curry-comb. Dress very long and very gently, with the brush only. Keep the affected parts scrupulously clean with tepid water.

NASAL GLEET.

Cause.—Decayed molar tooth; kicks from other horses; injuries to the frontal bones.

Symptoms.—Distortion of the face; partial enlargement and softening of the facial bones; irregular discharge of fœtid pus from one nostril. The discharge is increased, or brought down by feeding off the ground, or by trotting fast.

Treatment.—Surgical operation, with injection of a weak solution of chloride of zinc. Also, give daily a ball composed of balsam of copaiba, half-an-ounce; powdered cantharides, four grains; cubebs, a sufficiency. If the foregoing should affect the urinary system, change it for half-drachm doses of extract of belladonna, dissolved in a wine-glass of water. Give these every fourth day, and on such occasions repeat the belladonna every hour, until the appetite has been destroyed.

NASAL POLYPUS.

Symptoms.—An enlarged nostril; a copious, mucous discharge; signs of suffocation if the free nostril be stopped; a cough generally forces down the growth.

Treatment.—Surgical operation, which removes the tumour.

NAVICULAR DISEASE.

Causes.—Undue strain to the tendon of the foot bone ; treading on a rolling stone.

Symptoms.—Acute lameness ; this disappears, but may come again in six or nine months. Acute lameness is then present for a longer time, while the subsequent soundness is more short. Thus, the disease progresses till the horse is lame for life. The pain in one foot causes greater stress upon the sound leg, and from this cause both feet are ultimately affected. The foot is pointed in the stable. The limb diminishes, while the hoof thickens and contracts. The horse, when trotting, takes short steps, and upon the toe, going groggily.

Treatment.—Feed liberally upon crushed oats. Soak the foot every other night in hot water. Afterwards bandage the leg, fix on tips, and, having smeared the horn with glycerine, put on a sponge boot. Rest very long; six months in the first instance, and then give three months' agricultural employment. In bad cases resort to neurotomy, but do so upon the second attack of lameness, because continued disease disorganises the internal structures of the hoof, and also occasions the sound foot to be attacked by navicular ulceration.

NEPHRITIS, OR INFLAMMATION OF THE KIDNEYS.

Causes.—Bad provender, or nitre in a mash, and long or fast work upon the following day.

Symptoms.—Hard, quick pulse ; short breathing ; pallid membranes ; looking at the loins ; depressed head ; roached back ; hind legs straddling ; scanty urine ; refusing to turn in the stall ; and crouching under pressure on the loins. Subsequently, pus is voided with the water. If the urine has a fœtid odour, if blood be present, if the pulse grows quicker, if pressure gives no pain, and if the perspiration has an urinous smell, death is near at hand. To be certain of nephritis, insert the arm up the rectum, and move the hand towards the kidneys.

Treatment.—Rub mustard into the skin of the loins. Cover it over to prevent it becoming dry. Apply fresh sheepskins as soon

as these can be procured. Inject warm linseed-tea every hour. A ball composed of croton farina, two scruples; extract of belladonna, half-a-drachm; treacle and linseed meal, a sufficiency should be given immediately. A pail of linseed-tea may be placed in the manger. Feed on linseed-tea, and mind the oats (when allowed) are very good. While the pain is acute give thrice daily a ball composed of extract of belladonna, half-a-drachm; crude opium, two drachms; honey and linseed-meal, of each a sufficiency. When the pain is excessive, repeat the above ball every hour.

OCCULT SPAVIN.

Causes.—Any severe strain imposed upon the hock.

Symptoms.—Sudden lameness, which never departs; but in the end becomes very bad. The disease is always worse after work, and better after rest. The foot is without disease, and the leg is not hot or painful; yet the lameness continues and gets worse. The leg is snatched up in the walk, and the foot is not turned outward.

Treatment.—Get the horse into slings. Rub the front of the hock with an embrocation, composed of compound soap liniment, sixteen ounces; tincture of cantharides, liquor ammoniæ, and laudanum, of each two ounces. After the joint is embrocated, wrap it round with flannel, held upon the hock with elastic rings. Give three feeds of corn and sweet hay daily. After the horse bears upon the diseased limb, allow the slings to remain for three months. Three months after it has left the slings put to gentle work, but mind the labour is not in any way exhausting. The work must not be full till six months have elapsed. Keep the bowels regular with bran mashes and green meat. If all treatment fails, cast the horse; retract the injured limb; make a small puncture, and inject one ounce of dilute spirits of wine, in which half-a-drachm of iodine has been dissolved. Place the horse in slings, and apply cold water to the hock. When the pulse is quiet, feed very liberally.

OPEN SYNOVIAL CAVITIES.

Causes.—Wounds inflicted by kicking in harness, running away, and being run into; or restraint caused by the use of the bearing-

rein, which incapacitates the horse from those movements of the head so important in preventing a fall and other accidents.

Symptoms.—Bursæ are attended with least danger when punctured; sheaths of tendons are more dangerous; joints are by far the most serious. Judge which is opened by the extent of the wound and the quantity of synovia released.

Treatment.—Exercise gentleness towards the injured animal. Wash, as was directed for broken knees. Examine if there be any sac or bag into which dirt could have entered. If one exists, place a large spatula under the knee; then take a knife with a sharp point, but with its edge blunted the two posterior thirds of its length; guard the point with a lump of bees' wax; introduce this into the sac, and drive the point through the bottom of the bag. An opening will thereby be created, through which the pus and dirt will gravitate. If the probe enters the knee of the flexed leg unopposed three-quarters of an inch, push it no further · be satisfied the cavity is opened.

OPEN SYNOVIAL JOINTS.

Treatment.—Proceed, in the first instance, as for broken knees. Then give a drink composed of sulphuric ether and laudanum, of each one ounce; water, half-a-pint: look to the comfort. Use the arnica lotion as for broken knees during the first three and a half days. At the end of that time, turn the horse gently round in the stall, and let it stand with its head towards the gangways. Place the slings before the horse, and leave the animal to contemplate them for half-an-hour. Then, with extreme gentleness, fix them; but do not pull the cloth up to the abdomen. Leave a pail of water suspended from one pillar, and feed from a high trough, supported upon light legs. Let the horse be watched night and day for the remainder of the week. When the animal is at ease in the slings, these may be heightened till the cloth lightly touches, but not presses, against the belly. With the slings, change to the chloride of zinc lotion, one scruple to the pint of water; have this frequently applied during the day. It will coagulate the albumen, and promote the healing of the wound. The albumen will accumulate as a large ball in front of the injury; do not touch it

Allow it to fall off. The cure is nearly perfect when it falls. When pressure can be endured, the slings may be removed, though the healing process should be confirmed before the animal is allowed to stand near anything against which it could strike the knee.

OPERATIONS

Admit of no abbreviation; they should never be hastily undertaken; they should be only resorted to after the time has been allowed for thought, and opportunity has been afforded for more than one perusal of the directions detailed in this book.

OSSIFIED CARTILAGES.

Cause.—Battering the foot upon hard roads.

Symptoms.—Of little consequence in heavy horses, unless accompanied with ringbone. The disease causes lameness in light horses used for fast work.

Treatment.—Rest; liberal food; and small blisters to the foot immediately above the sides of the hoof.

OVER-REACH.

Cause.—When a good stepper is very tired, this accident sometimes happens, the coronet of the fore foot upon the outer side being severely wounded by the inside of the hind shoe.

Symptoms.—A severe wound and a large slough, probably followed by a false quarter.

Treatment.—Feed liberally, and bathe the injury thrice daily with the chloride of zinc lotion, one grain to the ounce of water.

PARROT-MOUTH.

Cause.—Natural malformation, usually noticed in old horses, where teeth have grown to an inordinate length.

Symptoms.—Projecting upper teeth; an inability to graze, or to clean out the manger.

PARTIAL PARALYSIS.

Causes.—Violent exertion; often the result of general debility.

Symptoms.—One hind leg gets in the way of the other, and threatens to throw the animal down.

Treatment.—A loose box; warm clothing; good grooming; warmth to loins; regulate the bowels with mashes and green meat; absolute rest. Give the following ball, night and morning: —Strychnia, half-a-grain (gradually work this medicine up to one grain and a half); iodide of iron, one grain; quassia powder and treacle, a sufficiency.

PHLEBITIS, OR INFLAMMATION OF THE VEIN.

Cause.—The result of bleeding in the neck or from either of the limbs, when inflammation of the wound supervenes.

Symptoms.—The earliest indication is a separation of the lips of the wound and the presence of a small quantity of thin discharge. A small swelling then takes place, and the vein hardens above the puncture. Then abscesses form along the course of the vessel. These mature; burst; send forth a contaminated pus. The abscesses are united by sinuses. If these signs are neglected a dark discharge, resembling decayed blood, issues from the numerous wounds and soils the neck. Dulness ensues; the brain becomes affected; and the horse perishes phrenitic.

Treatment.—Remove the pin and apply a blister. Another may be required. In bad cases, blister must follow blister, but not be rubbed in. A little oil of cantharides should be put over the sore with a paste brush. Place in a loose box and litter with tan; feed on slops, which require no mastication. Let the horse remain there, and be so fed for six weeks subsequent to the cessation of all treatment. Then give a little exercise at a slow pace, gradually augmented.

PHRENITIS.

Cause.—Pressure to the brain, obtained by slight enlargement of blood-vessels or by the presence of tumours.

Symptoms.—Heaviness, succeeded by fury in excess, but without any indication of malice.

Treatment.—Give a purgative of double strength, and administer half-drachm doses of aconite root, or drachm doses of digitalis, whichever is soonest obtained. But, whichever is procured must be infused in a pint of boiling water, and, when cool and strained, ought to be given every half-hour till the animal becomes quiet.

PLEURISY.

Causes.—Over-exertion; blows; injuries; cold; or any cause calculated to devitalise the system.

Symptoms.—These are quickly developed. The pulse *strikes* the finger; pain, continuous; agony, never ceases; horse does not feed. Body, hot; feet, cold; partial perspirations. Muscles, corrugated in places; cough (when present) suppressed and dry; auscultation detects a grating sound and a dull murmur at the chest. Pressure between the ribs produces great pain, or makes the animal resentful. The head is turned very often towards the side; the fore foot paws; the breathing is short and jerking.

Treatment.—Should be active. Place in a loose box; bandage the legs; leave the body unclothed. Give every quarter of an hour a scruple of tincture of aconite in a wineglass of warm water. When pulse has softened, give every second hour sulphuric ether and laudanum, of each one ounce; water, half-a-pint. When the pulse and pain are amended, introduce the steaming apparatus. Do nothing for the bowels. Place lukewarm water within easy reach of the head, and give nothing more while the disease rages. When the disease departs, return with caution to full food. After the affection subsides blister throat and chest. If the horse is costive, administer enemas; or a bundle of cut grass may be presented with the other food.

PNEUMONIA.

Causes.—Fat; irregular work, and sudden exertion.

Symptoms.—Breathing laboured; oppressed pulse; partial consciousness; giddiness. Standing with outstretched legs; head

and ears, dejected; coat, rough; extremities and body, cold; visible membranes, discoloured; bowels, costive; feeling, half-dead; and general oppression.

Treatment.—Place in a loose box strewn with damp tan; take off the shoes; place water within easy reach; no food. If winter clothe; then introduce steam—when the steam is abundant, take off the clothes. Give solution of aconite root, half-an-ounce; sulphuric ether, two ounces; extract of belladonna (rubbed down with half-a-pint of water), one drachm. Repeat the drink three times each day. When the pulse improves, withdraw the aconite; when the breathing amends, abstract the belladonna—or increase either, as pulse or breathing become worse. Allow only hay-tea, with a little oatmeal in it, until the disease abates. On amendment, cautiously increase the food. Lying down is the first sign of improvement. Do not disturb the animal—it must require rest, having stood throughout the attack.

POLL EVIL.

Causes.—Hanging back in the halter; hitting the poll against the beam of the stable door; blows on the head; and any external injury.

Symptoms.—The nose is protruded, and the head kept as motionless as possible; the animal hangs back when it is feeding from the manger. Pressure or enforced motion excites resistance. Swelling. The swelling bursts in several places, from which exudes a foul, fistulous discharge. Pus has been secreted; confinement has caused it to decay; while motion and fascia have occasioned it to burrow.

Treatment.—Paint the part lightly with tincture of cantharides, or acetate of cantharides. Do this daily till vesication is produced; then stop. When the swelling enlarges, open the prominent or soft places. Allow the pus to issue; then cut down on the wound, till the seat of the disease is gained. Use a proper knife, and include as many pipes as possible in one clean cut. All others should join this. Empty out all concrete matter. Wash the cavity with cold water. Excise all loose pieces of tendon, and all unhealthy flesh. Moisten the sore with the

chloride of zinc lotion, one grain to the ounce, and cover the wound with a cloth dipped in the solution of tar. If the disease has burst, still include the pipes in one smooth incision; clean out the concrete pus, and treat as has been directed. Spare the ligament which lies under the mane; and work in a breast strap after recovery.

PRICK OF THE SOLE.

Cause.—Generally the smith's carelessness when shoeing the horse.

Symptom.—Great lameness.

Treatment.—Withdraw the nails of the shoe. If one is wet, cut down on that hole until the sensitive sole is exposed. If not very lame, treat with lotion of chloride of zinc, one grain to the ounce of water. If very lame, treat as if the injury were a suppurating corn.

PRURIGO.

Cause.—Heat of body.

Symptom.—Itchiness. The horse rubs off hair; but never exposes a dry, corrugated surface.

Treatment.—Take away some hay. Give two bundles of grass per day. Allow two bran mashes each day, till the bowels are open. Apply the following wash:—Sulphuric acid, one part; water, ten parts. Drink: liquor arsenicalis, one ounce; tincture of muriate of iron, one ounce and a half; water, one pint,—half-a-pint to be given every night. Withdraw the drink a week after the disease has disappeared.

PUMICE FOOT.

Cause.—An animal reared on marshy land, having high action, batters the feet upon London stones.

Symptoms.—Bulging sole; weak crust; strong bars, and good frog.

Treatment.—The only relief possible is afforded by a bar-shoe, of the dish kind, and a leathern sole. The constant use of equal parts of animal glycerine and tar is also beneficial to the hoof.

PURPURA HÆMORRHAGICA.

Cause.—Defective nervous force inducing universal congestion.

Symptoms.—The attack is sudden. The body, head, and limbs enlarge; consciousness is partially lost. The horse stands, and the breathing is quickened. Through the skin there exudes serum with blood. The nostrils and lips enlarge, and part of the swollen tongue protrudes from the mouth. The appetite is not quite lost, although deglutition is difficult. Thirst is great.

Treatment.—Give half an ounce of chloroform in a pint of linseed oil, in the first stage. Repeat the dose in half-an-hour. No amendment following, give two ounces of sulphuric ether in one pint of cold water. In half-an-hour repeat the dose, if necessary. Incise the protruding tongue. Squeeze out the fluid, and return the organ to the mouth. Should the skin slough, bathe the part with solution of chloride of zinc, one grain to the ounce of water.

QUITTOR.

Cause.—Confined pus from suppurating corn; or prick of the sole; matter results, and this issues at the coronet. Or from injury to the coronet, generating pus, and this burrowing downward, as it cannot pierce the coronary substance. The secretion may also penetrate the cartilage, and thus establish sinuses in almost every possible direction.

Symptoms.—The horse is very lame. The animal is easier after the quittor has burst. Probe for the sinuses. If, after the superficial sinuses are treated, among the creamy pus there should appear a dark speck of albuminous fluid, make sure of another sinus, probably working towards the central structures of the foot.

RHEUMATISM.

Cause.—Generally follows other disorders—as influenza, chest affections, and most acute diseases. Very rarely does it appear without a forerunner.

Symptoms.—Swelling of particular parts, generally the limbs, heat and acute lameness. The disorder is apt to fly about the body. The synovia is always increased when the joints are attacked. The pulse and breathing are both disturbed by agony.

Treatment.—Lead into a loose box; fill the place with steam (see p. 333). Get ready the slings; put the belly-piece under the horse, but do not pull it up so as to lift the legs from the ground. Keep the steam up for one hour. Then, with cloths ready, wipe the animal thoroughly dry. Next, rub into the diseased parts the following—Compound soap liniment, sixteen ounces; tincture of cantharides, liquor ammonia, and laudanum—of each, two ounces. Afterwards, encase the limbs in flannel (see p. 334). Then give a bolus composed of powdered colchicum, two drachms; iodide of potassium, one drachm; simple mass, a sufficiency. Should the attack succeed upon other diseases, the diet must be supporting, everything being softened by heat and water. Next morning repeat the steaming, and give calomel, a scruple; opium, two drachms. At night steam again, and repeat the first bolus. Should the horse be fat withdraw all corn, if the strength can do without it. Give good food, and that easy of digestion.

RING-BONE.

Cause.—Severe strain to the pastern joint by dragging heavy loads up steep hills.

Symptoms.—A roughness of hair on the pastern, and a bulging forth of the hoof. A want of power to flex the pastern. An inability to bring the sole to the ground, save upon an even surface. Loss of power, and injury to utility.

Treatment.—In the first stage apply a poultice, with one drachm of camphor and of opium. Afterwards, rub with iodide of lead, one ounce; simple ointment, eight ounces. Continue treatment for a fortnight after all active symptoms have subsided, and allow liberal food and rest; work gently when labour is resumed.

RING-WORM.

Symptoms.—Hair falls off in patches, exposing a scurfy skin. The scurf congregates on the bare place about the circumference, which is apt to ulcerate.

Treatment.—Be very clean. Wash night and morning, and afterwards apply the following ointment. Animal glycerine, one

ounce; spermaceti, one ounce; iodide of lead, two drachms. Many other things are popular. For a detailed list of these, see the body of the book. A drink is likewise of use when employed with the ointment. Liquor arsenicalis, one ounce; tincture of muriate of iron, one ounce and a half; water, one quart. Mix, and give every night, half-a-pint for a dose. Should the ulceration prove obstinate, apply permanganate of potash, half-an-ounce; water, three ounces. Or, chloride of zinc, two scruples; water, one pint. Moisten the parts with a soft brush six times daily. Feed well, and do not work for one month.

ROARING.

Causes.—Parâlysis on the left side of the larynx, which the bearing-rein actively assists in producing.

Symptom.—A noise made at each inspiration.

Treatment.—No human power can restore the affected parts to their vitality. An operation to remove the obstacles that cause the roaring noise has been attempted, but has not proved successful.

RUPTURE AND STRICTURE OF THE ŒSOPHAGUS.

Cause.—The use of the butt-end of a carter's whip, which either rends the lining membrane of, or ruptures the gullet.

Symptom of Rupture.—The body becomes distended with gas, and death ensues. OF RENT MEMBRANE.—This induces a disinclination to feed, as the first symptom. A stricture is formed; excessive hunger; distension of the tube. A large sac is developed out of the stretched membrane above the stricture. Then, after feeding, the animal fixes the neck, and returns the masticated food through the throat and nostrils. Accompanying loss of condition, and failure of strength.

Treatment.—Feed on prepared, soft food; though the horse is, generally, not worth its ordinary keep at the stage when this is required.

SANDCRACK.

Cause.—Bad health, provoking imperfect secretion.

Symptoms.—Quarter crack occurs on light horses upon the inner side of the hoof. It usually commences at the coronet, goes down

the foot, and reaches to the laminæ. Toe crack happens in heavy wheelers, and is caused by digging the toe into the ground when dragging a load up-hill. From the sensitive laminæ, when exposed, fungoid granulations sometimes sprout, which, being pinched, produce excessive pain and acute lameness.

Treatment.—Always pare out the crack, so as to convert it into a groove. When the crack is partial, draw a line with the heated iron above and below the fissure. If granulations have sprouted, cleanse the wound with chloride of zinc lotion—one grain to the ounce of water—and then cut them off. Afterwards place the foot in a poultice. Subsequently pare down the edges of the crack while the horn is soft. Use the lotion frequently. Draw lines from the coronet to the crack, so as to cut off communication between the fissure and the newly-secreted horn. Shoe with a bar shoe, having the seat of crack eased well off and also a clip on either side. If the horse must work, lay a piece of tow, saturated with the lotion, into the crack: bind the hoof tightly with wax end. Tie over all a strip of cloth, and give this a coating of tar. When the horse returns inspect the part. Wash out any grit with the chloride of zinc lotion. Feed liberally on prepared food.

SCALD MOUTH.

Cause.—Powerful medicine, which burns the lining membrane of the mouth.

Symptoms.—A dribbling of saliva, with constant motion and repeated smacking of the lips.

Treatment.—Give soft food, and use the wash recommended for aphtha.

SEEDY TOE.

Cause.—Weakness, inducing an imperfect secretion of horn.

Symptom.—A separation between the crust of the coronet and the soft horn of the laminæ, commencing at the toe of the foot.

Treatment.—Remove the shoe. Probe the fissure which will be exposed. Cut away all the separated crust. Throw up until the removed portion has grown again. Feed liberally.

SIMPLE OPHTHALMIA.

Causes.—Slashing with the whip over the head; hay-seeds falling into the eyes; horses biting at each other in play; blows, etc.

Symptoms.—Tears; closed eyelid; the ball of the eye becomes entirely or partially white.

Treatment.—Remove any foreign body; fasten a cloth across the forehead; moisten it with a decoction of poppy heads, to which some tincture of arnica has been added. If a small abscess should appear on the surface of the eye, open it, and bathe with chloride of zinc lotion. Should inflammation be excessive, puncture eye-vein, and place some favourite food on the ground.

SITFAST.

Causes.—Ill health; badly-fitting saddle; too energetic a rider; loose girths; ruck in the saddle-cloth.

Symptom.—Like a corn on the human foot, but the hard, bare patch is surrounded by a circle of ulceration.

Treatment.—The knife should remove the thickened skin. Chloride of zinc, one grain; water, one ounce, to the wound. Attend to the bowels. Feed liberally; exercise well, and give night and morning. Liquor arsenicalis, half-an-ounce; tincture of muriate of iron, three-quarters of an ounce; water, one pint. Mix and give.

To prevent the occurrence of sitfast, use the Alpha air collar and pad.

SORE THROAT.

Causes.—In colts, change from freedom to work, from the field to the stable, is the cause. Sore throat, however, may be caused by close stables, or be an indication of some greater disease.

Symptoms.—Perpetual deglutition of saliva; want of appetite; inability to swallow a draught of liquid, the fluid returning partly by the nostrils, and each gulp being accompanied by an audible effort.

Treatment.—Forbear all work; clothe warmly; house in a large, well-littered, loose box. Gruel for drink; green meat, with three feeds of bruised and scalded oats; also beans, daily. If the bowels are obstinate, administer a drink composed of—Solution of aloes, four ounces; essence of aniseed, half-an-ounce; water, one pint. Should the throat not amend, dissolve half-an-ounce of extract of belladonna in a gallon of water; hold up the head; pour half-a-pint of this preparation into the mouth; and, in thirty seconds, let the head down. Do this six or eight times daily. No improvement being observed, try—Permanganate of potash, half-a-pint; water, one gallon—to be used as directed in the previous recipe. Still no change being remarked, prepare—Chloride of zinc, three drachms; extract of belladonna, half-an-ounce; tincture of capsicums, two drachms; water, one gallon.

All being useless, blister the throat.

No alteration ensuing, cast the horse, and mop out the fauces with a sponge which is wet with nitrate of silver, five grains; water, one ounce. Give a ball daily, composed of oak bark and treacle.

If none of these measures succeed, the throat must be complicated with some other disease.

SPASM OF THE DIAPHRAGM.

Cause.—Imprudently riding too far and too fast; sudden and violent exertion.

Symptom.—Distress, and a strange noise heard from the centre of the horse.

Treatment.—Pull up; cover the horse's body; lead to the nearest stable. Give, as soon as possible, a drink, composed of—Sulphuric ether, two ounces; laudanum, one ounce; tincture of camphor, half-an-ounce; cold water, or gruel, one pint. Give four drinks, one every quarter of an hour; then another four, one every half-hour; and then at longer intervals, as the animal recovers. When the animal is first brought in, bandage the legs and sponge the openings of the body. This done, sweat and dirt removed, clothe perfectly after the skin is quite dry, and continue treatment.

SPASM OF THE URETHRA.

Cause.—Acridity in the food or water.

Symptoms.—Small and violent emissions; straddling gait. Roached back; pain; total suppression of urine.

Treatment.—Insert the arm up the rectum, and feel the gorged bladder. Give, by the mouth, four-ounce doses of sulphuric ether and of laudanum, mixed with a quart of cold water; and as injection, mixed with three pints of cold water. Repeat these medicines every quarter of an hour until relieved. Give a ball containing four drachms of aloes. Should not the urine then flow forth, insert the arm, and press upon the bladder.

SPASMODIC COLIC. FRET. GRIPES.

Causes.—Fast driving; change of water; change of food; getting wet; fatiguing journeys; aloes; and often when no cause can be traced.

Symptoms—First Stage.—Horse is feeding; becomes uneasy; ceases eating; hind foot is raised to strike the belly; fore foot paws the pavement; the nose is turned towards the flank, and an attack of fret is recognised. *Second Stage.*—Alternate ease and fits of pain; the exemptions grow shorter as the attacks become longer; the horse crouches, turns round, then becomes erect; pawing, etc., follow; a morbid fire now lights up the eyes. *Third Stage.*—Pains lengthen; action grows more wild; often one foot stamps on the ground; does not feed, but stares at the abdomen; at last, without warning, leaps up and falls violently on the floor; seems relieved; rolls about till one leg rests against the wall. Should no assistance be now afforded, the worst consequences may be anticipated.

Treatment.—Place in a loose box, guarded by trusses of straw, ranged against the walls. Give one ounce of each of sulphuric ether and of laudanam, in a pint of cold water, and repeat the dose every hour if the symptoms do not abate. If no improvement be observed, double the active agents, and, at the periods stated, persevere with the medicine. Soft soap, dissolved in a quart of water, as an enema, has done good. No amendment ensuing, dilute some strong liquor ammoniæ with six times its bulk of

water, and saturating a cloth with the fluid, hold it, by means of a horse rug, close to the abdomen. It is a blister; but its action must be watched, or it may dissolve the skin. If, after all, the symptoms continue, there must be more than simple colic to contend with.

SPAVIN.

Causes.—Hard work; slipping on the road; and sudden exertion of any kind.

Symptom.—Any bony enlargement upon the lower and inner side of the hock. Prevents the leg being flexed. Hinders the hoof from being turned outward. Causes the front of the shoe to be worn, and the toe of the hoof to be rendered blunt by dragging the foot along the ground. Leaves the stable limping; returns bettered by exercise.

Treatment.—View the suspected joint from before, from behind, and from either side. Afterwards feel the hock. Any enlargement upon the seat of disease, to be felt or seen, is a spavin. Feed liberally, and rest in a stall. When the part is hot and tender, rub it with belladonna and opium, one ounce of each to an ounce of water. Apply a poultice: or put opium and camphor on the poultice; or rub the spavin with equal parts of chloroform and camphorated oil. The heat and pain being relieved, apply the following, with friction—Iodide of lead, one ounce; simple ointment, eight ounces.

SPECIFIC OPHTHALMIA.

Cause. — The fumes of impure stables, caused by imperfect ventilation and drainage.

Symptoms. — A swollen eyelid; tears; a hard pulse; sharp breathing; a staring coat; a clammy mouth; the nasal membrane is inflamed, or leaden-coloured; the lid can only be raised when in shadow. The ball of eye reddened from the circumference; the pupil closed; the iris lighter than is natural. The disease may change from eye to eye; the duration of any visitation is very uncertain; the attacks may be repeated, and end in the loss of one or both eyes. If one eye only is lost, the remaining eye generally strengthens.

Treatment.—Remove from the stable, and place in a dark shed. Open the eye-vein, and puncture the lid if needed; put a cloth, saturated with cold water, over both eyes. If the horse is poor, feed well; if fat, support, but do not cram; if in condition, lower the food. Sustain upon a diet which requires no mastication. Give the following ball twice daily:—Powdered colchicum, two drachms; iodide of iron, one drachm; calomel, one scruple; make up with extract of gentian. So soon as the ball affects the system, change it for—Liquor arsenicalis, three ounces; muriated tincture of iron, five ounces. Give half-an-ounce in a tumbler of water twice daily. See the stable is rendered pure before the horse returns to it.

SPLINT.

Cause.—Early and hard work.

Symptom.—Any swelling upon the inner and lower part of the knee of the fore leg, or any enlargement upon the shin-bone of either limb. On the knee they are important, as they extend high up. On the shin they are to be dreaded, as they interfere with the movements of the tendons. All are painful when growing, and in that state generally cause lameness.

Treatment.—Feel down the leg. Any heat, tenderness, or enlargement is proof of a splint. If, in the trot, one leg is not fully flexed, or the horse "dishes" with it, it confirms the opinion. Time and liberal food are the best means of perfecting them. When they are painful, poultice, having sprinkled on the surface of the application one drachm each of opium and of camphor. Or rub the place with one drachm of chloroform and two drachms of camphorated oil. To check the growth of a splint, rub it well and frequently with iodide of lead, one ounce; simple ointment, eight ounces.

SPRAIN OF THE BACK SINEWS.

Cause.—Cart-work upon a hilly country.

Symptom.—Gradual heightening of the hind heel.

Treatment—The only possible relief is afforded by an operation, "division of the tendons," and from this operation good results are seldom obtained.

STAGGERS.

SLEEPY STAGGERS *and* MAD STAGGERS *are only different stages of the same disorder.*

Cause.—Over-gorging.

Symptoms.—Excessive thirst; dulness, or sleepiness; snoring; pressing the head against a wall. Some animals perish in this state; others commence trotting without taking the head from the wall, and such generally die, but sometimes recover. Other horses quit the sleepy state; the eyes brighten; the breath becomes quick. Such animals exhibit the greatest possible violence, but without the slightest desire for mischief.

Treatment.—Allow no water. Give a quart of oil. Six hours afterwards give another quart of oil, with twenty drops of croton oil in it, should no improvement be noticed. In another six hours, no amendment being exhibited, give another quart of oil, with thirty drops of croton oil in it. After a further six hours, repeat the first dose, and administer the succeeding doses at the intervals already stated, until the appearance changing indicates that the body has been relieved.

For the full development of the mad stage no remedies are of the slightest avail.

STRAIN OF THE FLEXOR TENDONS.

Cause.—Severe strain imposed by persistent hard work.

Symptoms.—The animal goes oddly, not lame. The defective action will disappear upon rest; but stiffness is aggravated by subsequent labour. Any attempt to work the horse sound induces incurable lameness, or contraction of the tendons.

Treatment.—Allow several hours to elapse before any attempt is made to discover the disease. A small swelling, hot, soft, and sensitive, may then appear. Bind round it a linen bandage, and keep it wet with cold water. Throw up the horse. Give four drachms of aloes. Do not turn out, but allow two feeds of corn each day. Keep in a stall, and do not put to work till more than recovered.

STRANGLES.

Cause.—Something requiring to be cast from the system so as to suit the young body to a sudden change.

Symptoms. — A slight general disturbance which, however, remains. The colt continues sickly. After a day or two the neck becomes stiff, and a swelling appears between the jaws. The enlargement, at first, is hard, hot, and tender. A discharge from the nose comes on. The symptoms increase; the throat becomes sore. Breathing is oppressed; coat stares; appetite is lost; tumour softens, and, being opened, the animal speedily recovers.

Treatment.—Neither purge nor bleed. Give all the nourishment that can be swallowed. If all food is rejected a little cut grass may tempt the colt. Corn, ground and scalded, may be offered, a little at a time from the hand. No grooming; light clothing; ample bed; door and window of loose box should be open. Gently stimulate the throat with the following: Spirits of turpentine, two parts; laudanum, one part; spirits of camphor, one part. Apply with a paste brush, morning, noon, and night, until the throat is sore. After every application take three pieces of flannel, place these over the part, and bind on with an eight-tailed bandage. So soon as the tumour points apply the twitch, and have one fore leg held up. Then open the swelling with an abscess-knife. It may be necessary to make another incision. There are other occasional varieties of strangles, for which consult the substance of the work, pp. 287–292.

STRINGHALT.

Cause.—Defective nervous action, owing to over-exertion.

Symptom.—Raising both hind legs, one after the other, previous to starting.

Treatment.—None is possible.

SURFEIT.

Cause.—Heat of body.

Symptom.—An eruption of round, blunt, and numerous spots.

Treatment.—If the pulse is not affected the symptom may disappear in a few hours. Look to the food. Abstract eight pounds of hay, and allow two bundles of cut grass per day. Even increase the oats, among which mingle four or five chopped carrots. The following drink will be of service:—Liquor arsenicalis, one ounce; tincture of muriate of iron, one ounce and a half; water, one quart. Mix. Give daily—one pint for a dose.

Symptoms.—If a young horse has been neglected through the winter, the surfeit lumps do not disappear. An exudation escapes; the constitution is involved, and the disease is apt to settle upon the lungs.

Treatment.—Do not take out. Keep the stable aired, and attend to cleanliness. Feed as previously directed, and allow bran mashes when the bowels are constipated. Administer the drink, recommended above, night and morning. Clothe warmly; remove from a stall to a loose box. If the appetite fails, give gruel instead of water, and present a few cut carrots from the hand. The shortest of these cases occupies a fortnight.

SWOLLEN LEGS.

Cause.—Debility.

Treatment.—Place in a loose box. Feed upon cut grass instead of hay. Damp the corn, and sprinkle a handful of ground oak bark on each feed. Attend to exercise. If the legs continue to enlarge, hand-rub them well and long.

TEETH.

Cause.—A thickening of the membrane sometimes conceals the upper tushes, and provokes constitutional symptoms.

Treatment.—Lance the membrane.

Symptoms of Toothache.—Head, carried on one side or pressed against the wall; saliva, dribbles from the lips; quidding, or partial mastication of the food, and allowing the morsel to fall from the mouth. Appetite, capricious; sometimes spirit is displayed—then the horse is equally dejected. The tooth dies; the opposing tooth grows long. The opposite teeth become very

sharp, from the horse masticating only on one side. The long tooth presses upon the gum and provokes nasal gleet.

Treatment.—Chisel off projecting tooth; file down the sharp edges of the opposite teeth, and look to the mouth frequently.

TETANUS.

Causes.—Cold rain; draughts of air; too much light; wounds, or anything that injuriously affects the nervous force.

Symptoms.—The wound often dries up. The horse grows fidgety. Upon lifting up the head, "the haw" projects over the eye. The tail is raised; the ears are pricked; the head is elevated; the limbs are stiff; the body feels hard. Any excitement may call up a fearful spasm.

Treatment.—Give a double dose of purgative medicine. Place in solitude and in quiet. Put a pailful of gruel and a thin mash within easy reach of the head. Let nobody, excepting the favourite groom, approach the place; and allow him to enter it only once a day.

THOROUGH-PIN.

Cause.—Excessive labour.

Symptoms.—A round tumour going right through the leg, and appearing anterior to the point of the hock. It is nearly always connected with bog spavin.

Treatment.—Never attack thorough-pin and bog spavin at the same time. Relieve the thorough-pin first by means of rags, cork, and an india-rubber bandage, cut so as not to press on the bog spavin. If the corks occasion constitutional symptoms use a truss to press upon the thorough-pin, which, being destroyed, apply a perfect bandage and wetted cloths to the bog spavin. When attempting to cure bog spavin, however, continue the remedy to the thorough-pin, or the cure of one affection may reproduce the other.

THRUSH.

Cause.—Standing in filth, and contaminated stables.

Symptoms.—A foul discharge running from the cleft of the frog. This decomposes the horn. The surface of the frog becomes

ragged, and the interior converted into a white powder. The affection does not generally lame; but should the horse tread on a rolling stone it may fall as though it were shot.

Treatment.—Pare away the frog till only sound horn remains, or until the flesh is exposed. Then tack on the shoe, and return to a clean stall. Apply the chloride of zinc lotion, three grains to the ounce of water, to the cleft of the frog by means of some tow wrapped round a small piece of stick. When the stench has ceased a little liquor of lead will perfect the cure. For contracted feet pare the frog, and every morning dress once with the chloride of zinc lotion; but do not strive to stop the thrush.

TREAD.

Cause.—Fatigue and overweight.

Symptoms.—In light horses it occurs towards the end of a long journey. The hind foot is not removed when the fore foot is put to the ground. The end of the fore shoe, consequently, tears off a portion of the coronet from the hind foot. In cart horses, after the horse is fatigued, the load has to be taken down a steep hill; the animal, being in the shafts, rocks to and fro; the legs cross, and caulkin of one shoe wounds the coronet of the opposite hoof.

Treatment—Bathe the sore with the chloride of zinc lotion, one grain to the ounce of water. Continue to do this thrice daily; feed liberally. A slough will take place, and the animal be well in about a month; the only danger being the after result of a false quarter.

TUMOURS.

These are so various, and of such different natures, that in every case a surgeon should be consulted.

WART.

Cause.—Unknown.

Symptoms.—There are three kinds of warts. 1*st.* Some are contained in a cuticular sac, and upon this being divided shell out. 2*nd.* The second are cartilaginous and vascular. These grow

to some size, and are rough on the surface. They are apt to ulcerate. *3rd.* Consists of a cuticular case enclosing a soft granular substance.

Treatment.—When of the first kind slit up, and squeeze them out. The second kind excise, and apply a heated iron to stop the bleeding. The third kind are better let alone.

WATER FARCY.

Cause.—Overwork and coarse feed, succeeded by periods of stagnation. It is the warning that true farcy threatens the stable.

Symptoms.—The horse is found constitutionally ill with one leg greatly swollen.

Treatment.—Improve the diet, and never allow the horse to remain a day in the stable without exercise. Saturate the swollen limb with cold water every morning, and have it afterward thoroughly hand-rubbed until it is perfectly dry. Should lameness remain after the first day, a few punctures may be made into the limb, but only through the skin. Give the following ball every morning:—Iodide of iron, one drachm; powdered cantharides, two grains; powdered arsenic, one grain; cayenne pepper, one scruple; sulphate of iron, one drachm; treacle and linseed meal, a sufficiency. Mix. The delay, even of a day, in treatment is attended with danger in this disease.

WINDGALLS.

Cause—Continuous hard work.

Symptoms.—Small enlargements, generally upon the hind legs and below the hocks; no lameness; two windgalls appear above the pastern, one beneath that joint. After extraordinary labour the round swellings disappear, and the course of the flexor tendons becomes puffy. Sometimes continued irritation will cause the windgalls to greatly enlarge, and ultimately provokes their case to change into bone. During these changes the horse is very lame.

Treatment.—Fold pieces of rag; wet them; put these on the windgalls; place on the rags pieces of cork, and over the cork lace

on an india-rubber bandage. Mind this bandage is constantly worn, save when ridden or driven by the proprietor. Rest is the only alleviation for the change of structure.

WINDY COLIC.

Causes.—Gorging on green food; but more commonly impaired digestion, consequent upon severe labour and old age.

Symptoms.—Uneasiness; pendulous head; cessation of feeding. Breathing laborious; fidgets; rocking the body; enlargement of the belly; pawing. Standing in one place; sleepy eye; heavy pulse; flatulence; the abdomen greatly enlarged. Breathing very fast; pulse very feeble; blindness; the animal walks round and round till it falls and dies.

Treatment.—Three balls of sulphuret of ammonia, two drachms, with extract of gentian and powdered quassia, of each a sufficiency, may be given, one every half-hour. Next, one ounce of chloride of potash, dissolved in a pint of cold water, and mingled with sulphuric ether, two ounces, should be horned down. In an hour's time two ounces each of sulphuric ether and of laudanum; half-an-ounce of camphorated spirits; enemata of cold water may be thrown up the rectum, and the above remedies continued until relief has been afforded; one drachm of carbonate of ammonia may be administered.

WORMS

Are of four kinds—the Tœnia, the Lumbrici, the Strongulus, and the Ascarides.

The Tœnia mostly affect the young.

Cause.—Starving the mare when with foal, and breeding from old animals.

Symptoms.—Checked development; large head; low crest; long legs, and swollen abdomen. Appetite, ravenous; body, thin; coat, unhealthy; breath, fœtid. The colt rubs its nose against a wall, or strains it violently upward; picks and bites its own hair.

Treatment.—Give every morning till the coat is glossy—Liquor arsenicalis, from one to eight drachms; muriated tincture of iron, from one and a half to twelve drachms; extract of belladonna, from ten grains to two drachms. Dose for young animals must be considerably reduced, and such medicine as prescribed should be administered under the advice of a veterinarian.

The Lumbrici prey upon the old and the weakly.

Treatment.—Tartarised antimony, two drachms; common mass, a sufficiency to make one ball; give one every morning.

The Strongulus, during life, is generally not known to be present.

The Ascarides cause great itching posteriorly, which provokes the horse to rub its hair off against the wall.

Treatment.—Try injections of train oil for one week. Then use infusion of catechu, one ounce to one quart of water. On the eighth morning give aloes, four drachms; calomel, one drachm. Tobacco-smoke enemas are sometimes useful, and the following ointment may be placed up the rectum, night and morning:—glycerine, half-an-ounce; spermaceti, one ounce. Melt the spermaceti, and blend; when cold, add strong mercurial ointment, three drachms; powdered camphor, three drachms.

WOUNDS.

A Lacerated Wound is generally accompanied by contusion, but with little hæmorrhage. Shock to the system is the worst of its primary effects. The danger springs from collapse. A slough may probably follow. The slough is dangerous in proportion as it is tardy. The horse may bleed to death if the body is much debilitated.

Treatment.—Attend first to the system. Give a drink composed of sulphuric ether and laudanum, of each one ounce; water, half-a-pint. Repeat the medicine every quarter of an hour if necessary, or till shivering has ceased and the pulse is healthy. A poultice made of one-fourth brewer's yeast, three-fourths of any coarse meal; or a lotion consisting of tincture of cantharides, one ounce; chloride of zinc, two drachms; water,

three pints; may be employed. When the slough has fallen, apply frequently a solution of chloride of zinc, one grain to the ounce of water; and regulate the food by the pulse.

An Incised Wound produces little shock. The danger is immediate, as the horse may bleed to death.

Treatment.—Do not move the horse. Dash the part with cold water, or direct upon the bleeding surface a current of wind from the bellows. When the bleeding has ceased and the surfaces are sticky, draw the edges together with divided sutures. When the sutures begin to drag, cut them across. After copious suppuration has been established bathe frequently with the solution of chloride of zinc, one grain to the ounce of water.

An Abraded Wound, generally, is accompanied by grit or dirt forced into the denuded surface. The pain is so great, the animal may sink from irritation.

Treatment.—Cleanse by squeezing water from a large sponge above the wound, as was directed for broken knees, and allow suppuration to remove any grit that is fixed in the flesh. Support the body and use the chloride of zinc lotion.

A Punctured Wound is dangerous, as the parts injured are liable to motion. On this account, those above the stifle are very hazardous. Sinuses form from the torn fascia opposing the exit of the pus; also because the small hole in the skin generally bears no proportion to the internal damage.

Treatment.—Always enlarge the external opening, to afford egress to all sloughs and pus. Regulate the food by the symptoms, and use the chloride of zinc lotion.

A Contused Wound, when large, causes more congealed blood than can be absorbed. This corrupts, and a slough must occur or an abscess must form. Either generate weakness, produce irritation, and may lead to fatal hæmorrhage. Or sinuses may form. Wherefore, such accidents are not to be judged of hastily.

Treatment.—When the contusion is slight, rub the part with iodide of lead—one drachm of the salt to an ounce of lard. When large, divide the skin every eighth inch, the entire length of the swelling. Bathe the injury with the chloride of zinc lotion,

and support the body, as the symptoms demand liberality in the matter of food.

In all wounds, gain if possible a large depending orifice, and cover the denuded surfaces with a rag saturated with carbolic acid.

This Summary has been appended in order that advice in emergencies may be immediately obtained, but at the same time the reader will always best consult his interests and pocket by at once consulting a qualified veterinarian. Coachmen and grooms possess, to a certain extent, some practical knowledge in the treatment of horses, but are totally unable to recognise the cause and effect of the various affections which they often attempt to prescribe for and sometimes render worse by their interference.

In all diseases there is a right and a wrong method of treatment,—the one tends to induce bad results, the other leads to cure. Men unacquainted with scientific research cannot successfully deal with those subjects which require that knowledge which the pathologist alone commands. Always send, even in trivial cases, for a veterinarian, remembering that a stitch in time saves nine, and prevention is better than cure.

ANÆSTHETICS.

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The knowledge that certain medicinal agents had the power of inducing sleep during lengthened periods was possessed by the ancients. Both lay and medical writers of the past have recorded how persons, after the imbibition of soporifics, have been rendered insensible to the infliction of pain.

Pliny narrates that certain plants have "the power of causing sleep in those who take them."

Dioscorides mentions how surgeons administer a preparation made "from mandragora roots to those patients whom they are going to cut or burn."

Galen recognises the power this root has "to paralyse sensation and motion."

Isodorus recommends mandrake. He writes,—"A wine from the bark of this root is given to those about to undergo an operation, that, being asleep, they may feel no pain."

In the reign of Henry VIII., his physician, William Bullen, gives a prescription for a preparation for rendering patients insensible to pain: "The juice of a certain herb" (it is supposed to have been mandragora) "pressed forth, and kept in a close earthen vessel, according to art, bringeth deep sleep, and casteth a man into a trance or deep terrible sleep, until he shall be cut of the stone."

Not only were the ancients cognisant of the soporific effects of medicines taken by the mouth, but they also knew how the inhalation of vapours would render persons oblivious of anything that might occur to them during the periods of their exhibition. The somniferous sponge of Ugone da Lucca may be cited in proof of this assertion. Ugone mixed in a brazen vessel certain ingredients, consisting of opium, hyoscyamus, lettuces, etc., with which a sponge was placed; the mass was then boiled until the juices extracted

were absorbed by the sponge. "As oft as there shall be need of the sponge, place it for an hour in hot water, and let it be applied to the nostrils of him who is to be operated on, until he has fallen asleep, and so let surgery be performed."

We are indebted to the Turks, who introduced into Europe the process of distillation, which gave a great impetus to the advancement of chemical research, and through the medium of the still caused the manifestation of those gaseous eliminations which, by inhalation, produced both remedial and soporific effects.

It may seem strange that, although the means were known whereby insensibility to pain could be procured, the use of anæsthetics was not universally adopted until the second half of the current century. It was not until after the discovery of oxygen by Priestley that the importance of the inhalation of gases as curative agencies was brought to light.

In 1799 Sir Humphrey Davy was the first to discover that the inhalation of nitrous oxide gas was capable of destroying pain, and in 1818 Faraday showed that the vapour of sulphuric ether, "when inhaled, produced excitant effects similar to those produced by nitrous oxide gas." Yet, although the anæsthetic properties of the above were known to the bulk of the medical profession, their assistance in cases of operations were seldom brought into requisition, either by the surgeon or dentist, the fact being that the influence their advocates claimed for them had not been sufficiently tested, or had been unskilfully applied; and there were some who stated that the inhalation of ether was incapable of inducing that degree of oblivion which a patient should be placed under, so as to render him insensitive to pain, and for this reason experimenters were on the alert to discover a more potent anæsthetic than ether.

An American, Samuel Guthrie, in 1831 first discovered that a very agreeable diffusible stimulant was obtained by distilling three pounds of chloride of lime and two gallons of alcohol from a clean copper still. "From this distillation about one gallon of ethereal spirit" was obtained. In 1831 Soubeiran submitted to distillation a mixture of chloride of lime and alcohol, when he named the product obtained bichloric ether, because it contained "twice as much chlorine as that found in the chloride of olefiant gas." Liebig also about the same time carried out similar experiments

by distilling diluted alcohol and chloride of lime, from which he procured a diffusible stimulant, which was named chloride of carbon. In 1834 the product obtained by distillation from chloride of lime and alcohol was submitted to Dumas for analysis, who, on account of its relation in composition "to that of formic acid, denominated this liquid chloroform." From the above it will be seen that three experts, independently one of the other, discovered almost at one and the same time a new diffusible stimulant, to which Dumas gave the name of chloroform.

It is usually reported that the late Dr. Simpson of Edinburgh was the discoverer of the anæsthetic properties of chloroform—in fact, Simpson thought so himself, for, in a pamphlet, published November 10, 1847, he writes:—"Chloroform was discovered by Soubeiran 1831, and Leibig 1832. It has been used by some practitioners internally. Guillot prescribed it as an antispasmodic in asthma, etc.; but no person, so far as I am aware, has used it by inhalation, or discovered its remarkable anæsthetic properties, till the date of my own experiments." There is no doubt that Simpson discovered, quite independently of others, the anæsthetic properties of inhaled chloroform; although Jacob Bell, several months before, in the *Pharmaceutical Journal* for February 1847, wrote:—"Chloric ether as an anæsthetic has been tried in some cases with success"; and M. Flourens, in March 1847, made a communication to the French Academy of Sciences, which was published in the *Comptes Rendus*, that "hydrochloric ether produced the same effect as sulphuric ether. The action of hydrochloric ether has led me to test the properties of the new compound known under the name of chloroform. In a few minutes, from four to six, an animal exposed to the respiration of the vapour of this liquid became perfectly etherised. The spinal marrow was then laid bare, and the posterior roots were found insensible." It is most likely that Jacob Bell, M. Flourens, and Simpson experimented independently one of the other, although it must be conceded that the world is more indebted to the last named for the diffusion of that knowledge which led to the universal adoption of the inhalation of the vapour of chloroform, in order to render animal bodies about to undergo surgical operations insensitive to pain. Soon after the issue of Simpson's pamphlet chloroform was extensively used, and, as can easily be

imagined, was abused, as the practical knowledge of its effects had not been sufficiently tested, and more had to be learnt regarding not only the anæsthetic itself, but also the condition and temperament of the subjects to whom it was to be administered. By some patients it was inhaled too largely, by the sponge being placed too near the nostrils; or the vapour was not allowed sufficient admixture of air, which, in some instances, caused suffocation and sometimes death. It was exhibited, too, often by persons ignorant, not only of the properties of the vapour, but of the very elements of anatomy and physiology; and, consequently, the early introduction of this potent anæsthetic had difficulties to contend with; and a valuable agent in alleviating pain was brought into disrepute.

In 1847, Mr. Stapleton, in an address to the medical profession, inveighed against the indiscriminate use of this drug, which had, in some instances, produced fatal effects, owing to maladministration, or to the lack of knowledge regarding the physical organisation, temperament, and condition of those persons who had been placed under the influence of chloroform:—"It was found that certain persons could not inhale chloroform vapour with impunity, and that an examination of the physical condition of the patient about to be anæsthetised was necessary; precautions were taken to remove all impediments to free respiration, stays were undone, waist-belts unloosened, etc." Disaster taught lessons which warned future operators of the evils likely to occur, unless they used those precautions neglected by previous experimenters.

Other anæsthetics than chloroform are used, which seldom if ever are applied to domestic animals, and for this reason will not be narrated in the present notice. Moreover, as chloroform combined with ether is most commonly used in human, and is universally adopted in veterinary practice, it is only necessary to detail the mode of exhibiting it, and the precautions to be taken in its administration, and, in doing so, much of our experience must be gained from the effects produced on man. Dr. M'Guire asserts that chloroform "is an unsuitable anæsthetic in cases where there is a nervously weak heart, or where weakness results from fatty degeneration or from loss of blood, or great anæmia from other causes." These remarks apply with equal force to all animals about to be placed under the influence of chloroform, and

it is therefore, as regards successful operation, as important for the veterinarian to carefully examine his patient previously to the administration of chloroform as it is for the human surgeon before he exhibits this anæsthetic.

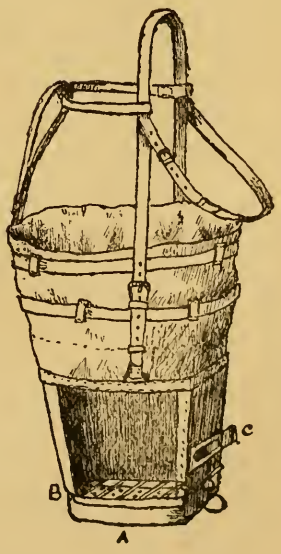
Previously to the inhalation of chloroform it is always desirable that the patient be cast, when the anæsthetic can be applied in the same manner as depicted below, there being no difference in the mode of procedure; the anæsthetist will only have to adapt his operations to an animal in a recumbent instead of a standing position. Always place a horse's head in a slightly raised position; and, whatever means may be employed for bringing the sponge saturated with the anæsthetic to the nostrils, never allow it to come within three inches of the animal's nostrils, nor touch the lips; and be careful to dilute the vapour with air, by causing free access to be given for its admission. Chloroform may be inhaled either through the medium of a towel, folded in such a manner as to form a cup or cone, at the apex of which the sponge can be inserted, and then may be introduced to the animal's nostrils. It is well to bring the anæsthetic gradually to the nose, so as not to let its influence be too quickly experienced; for, if an effort be made to induce anæsthesia too rapidly, the animal will struggle against this interference with its respiration, and retard, rather than expedite, the period necessary for rendering a patient insensitive to the infliction of pain: whereas, by gradual exhibition, *i.e.* by bringing the sponge by short degrees nearer and nearer to the nostrils, insensibility is induced with hardly any opposition on

A sponge containing chloroform, which should be held in the palm of the left hand at the point A, the right at the same time grasping the facial strap of the head collar.

the part of the patient being offered to the administration of the vapour.

The surgeon, immediately after an animal is brought to a state of anæsthesia, can commence any operation, but he must act totally independently of the anæsthetist, whose duty it is to watch the patient during the inhalation of the vapour, to see that it is kept well under its influence, and to notice that the breathing and action of the pulse are not injuriously affected. Uneven and stertorous respiration, and an unsteady or failing pulse, are indications of something amiss, which necessitates the immediate removal of the apparatus, so as to allow free access to the atmospheric air; and the operation must be deferred until after normal breathing and circulation have been restored.

This simple method of administering chloroform vapour with a cone-shaped towel is preferable to any apparatus designed for this purpose; but, when some operations are about to be performed, the intervention of a mechanical contrivance may prove of assistance. The various inventions that have been introduced to the medical world differ little one from the other. They have each the same object in view, namely, the formation of an instrument best adapted for the administration of chloroform. The form of one is here depicted, the lower side of which has been removed in order to show the internal arrangements, which are hereafter described.



It consists of a nosebag into which the horse's head can be introduced, and can there be fastened; the inside is well padded, by which the jaws, mouth, and face are protected from blows; and the vapour cannot fail to exert its influence so long as the apparatus remains on the animal's head. *A* represents a tin trough intended for the reception of a sponge, and *B* shows the position of certain bars, separated about an inch one from the other. These are raised above the sponge about two inches, so as to prevent the lips from touching

it, and insure the existence of a sufficient space between the nostrils and the sponge. *C* points to a slide which can be closed or withdrawn at the discretion of the operator, so as to exclude or admit air as circumstances demand. It matters little how ethereal vapours are applied. The chief object is to make provision against those disasters which experience has taught us how to avoid, and have been above detailed.

There are few operations that take more than half-an-hour for performance, and consequently anæsthesia need not be maintained for any longer period than this; but, should circumstances occur necessitating the continued application of chloroform vapour, there is little fear of its protracted maintenance causing disaster. Dr. Mapother kept a patient under the influence of chloroform during twelve consecutive hours; Dr. Murray, of Durham, during five hours, "without any unpleasant results"; Mr. Heath, of the Newcastle Infirmary, "maintained chloroform anæsthesia for seven hours"; and horses, dogs, and cattle have remained for longer periods under anæsthetic influence.

LOCAL ANÆSTHESIA BY ETHER SPRAY.

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The ether spray, invented by Dr. Richardson, possesses the power of rendering animal structures insensitive to pain, and has an advantage over chloroform in that it is applied with greater ease, and its exhibition is not likely to cause dangerous results.

The fluid from which the ether spray is obtained "is made by distilling together a light hydrocarbon with absolute ether, so as to produce a common fluid boiling at 84° Fahrenheit." For the human subject the best ether is employed, but in veterinary practice methylated ether answers the purpose quite as well as the purer variety.

The apparatus for the ether spray, and the whole detail for its application, has been so ably and clearly expressed in a pamphlet written by my friend, Dr. Richardson,[1] that a portion of it is transcribed *in extenso*:—

"The apparatus for the ether spray consists first of a bottle for holding the ether. Through a perforated cork a double tube is inserted, one extremity of the inner part of which goes to the bottom of the bottle. Above the cork a little tube, connected with a small hand bellows, pierces the outer part of the double tube, and communicates by means of the outer part, through a small aperture, with the interior of the bottle. The inner tube for delivering the fluid runs upwards nearly to the extremity of the outer tube. When the bellows are worked, a double current of air is produced, one current descending and pressing upon the ether to

[1] *Ether Spray as a Means for the Extinction of Pain in Operations on the Inferior Animals.* By Benjamin W. Richardson, M.A., M.D., F.R.C.P.

force it along the inner tube, and the other ascending through the outer tube and playing upon the column of ether as it escapes through a fine jet into the air.

"The fluid is thus dispersed from the fine jet into the air in the form of spray; it is still in that condition which we call fluid, but it is so finely distributed or sprayed out that it looks like a vapour of water—steam—issuing from the tube. In this finely divided state it easily volatilises on coming in contact with a surface, the temperature of which is higher than its own; it is thus transformed into the form or condition of matter called vapour, the transformation depending upon the heat it has extracted from the part upon which it has been directed.

"PAINLESS OPERATIONS.

"For Nerving.

"Perhaps the most painful surgical operation that can be performed on any animal is that of dividing a large nerve. To effect the operation on a horse without the aid of an anæsthetic, the animal has not only to be securely tied down, but the twitch has usually to be put on the nose so as to overcome the pain and the resistance of the subject by a process probably in itself more excruciating and more exhausting than the operation itself. Now, no more is required than to fix the animal without any pain, so that the limb may be kept steady. The surface to be divided is next cleared of hair with the comb and scissors, and the spray is then directed upon the part. The period of complete insensibility of the part is marked in the horse by a hardening of the tissues and a peculiar blue colour of skin. The operator proceeds to divide the skin in the line of the nerve, and as there is no bleeding the nerve is readily exposed. The nerve being laid bare, the spray is directed upon it until it has become hard and almost like metal; then a spatula is passed under the nerve fairly to isolate it, a little more spray is applied, and the nerve is cut through with the knife. When the operation is perfectly effected, the division of the nerve is made without a tremor on the part of the subject. The wound is closed and the operation is completed.

"For the Seton.

"When a seton has to be inserted, as in the leg of a horse, the hair is removed in the line of skin along which the needle must pass. Then the spray is applied like a brush in the course of the line until the skin is quite insensible. Next, at the point where the skin is transversely cut by the seton-scissors, the anæsthesia is carried a little more deeply and over a wider surface. The clip through the skin is made and the needle is introduced. As the needle is pushed slowly beneath the skin, the ether spray should be applied externally in advance of the point of the needle so as to keep up the insensibility; but when the needle has traversed the required length, and the point is brought out, the ether may be safely withdrawn; the seton-thread itself will pass quite painlessly if it has been well oiled, and the operation is accomplished.

"For Firing.

"Both on the human subject and on the horse, the local anæsthesia gives all that can be desired for the operation of firing. To carry out the operation on the horse, the hair over the part to be fired is first carefully removed. Next the ether is directed in full and large spray, in such way as to render insensible a space from three to four inches long, and as wide as may be necessary. Very deep anæsthesia is not required, and indeed is objectionable, as it cools the iron too rapidly, and impedes the course of the operation. The firing iron has itself to be sharp, and not at all heavy, and the strokes made with it must be quick and fine, but decisive. During the time when the iron is being used, the ether must be withdrawn, otherwise the vapour takes fire, and the operator is, for a moment, perplexed.

"It is worthy of remark that the local anæsthesia not only prevents the pain of the cautery at the period of burning, but prevents the after pain. This is the fact both in the human subject and in the horse.

"I have seen a surface of skin six inches long by three broad, cauterised in the human subject with a glowing iron without the least trace of pain; and I have seen a horse in which Mr. F. Mavor, in

the same painless manner, has made at least forty lines with the cautery, each line being from three to four inches long.

"For Removal of Tumours.

"For the removal of tumours from any of the inferior animals, if the tumour is within reach of the knife or scissors, the local anæsthesia is quite perfect. The hair over the part must be carefully shaven off, and then the whole surface must be made completely insensible. As the knife descends for the dissection of the tumour, spray must be made to precede the instrument. In a similar manner the frequent operation of castration may be easily and painlessly carried out.

"For Internal Operations.

"In the human subject, the spray process has been successfully used in the operation for hernia, for the removal of ovarian tumours, and with unprecedented success for the greatest of all operations—Cæsarian Section. In cases of animals such as the horse and cow, I see no reason whatever why it should not be applied for similar operations. In cases of mechanical obstruction of the bowels, a painless incision, large enough to admit the hand into the peritoneum, might readily be performed, and with far more chance of success than befalls the human subject, who though much less resistant to such operations, does nevertheless often recover from them. Again, in cases of parturition, where the function in the natural way is impossible, I see no reason why the delivery should not be promptly and painlessly effected by a lateral section into the womb. I have seen animals lingering for hours in the pains of labour, and dying at last from pain and exhaustion; animals so placed might, I think, now be relieved at once, and with a very fair chance of recovery, without pain.

"For Applying Caustics, or Escharotics.

"For applying caustics or escharotics to open and irritable surfaces, the local anæsthesia can in every case be employed. I have thus seen even strong nitric acid applied to an open sore without pain.

"For Relieving General Pain.

"In addition to the application of ether for preventing the pain of cutting operations, it may be used in cases where there is severe local suffering, as in acute pleurisy, in inflammation of joints, in neuralgia, and in cases of great irritability of joints. In horses suffering from foot lameness, it would be good in the early stage, to treat by simple rest and frequent local benumbing of the nerve with the spray without dividing the nerve at all. I believe in this way many valuable horses might be rapidly cured of temporary lameness.

"Application to Diagnosis, or Detection of Diseases.

"The Messrs. Mavor have used the ether spray with great success as a means in diagnosis, especially in one form of lameness —I mean knee lameness. When a horse is evidently lame in the knee, there may be disease there causing pain; but it is not necessary that the disease should be in the knee, for the disease may be remote, and the knee itself may be sound. It is therefore very important in such cases to determine the precise fact. To test this, the Messrs. Mavor, when in doubt, make the joint very deeply insensible, and then have the animal gently trotted. If the animal with the knee joint thus temporarily benumbed trots with perfect freedom, that is to say, without lameness, the lameness returning as the sensibility returns, the evidence is conclusive that the disease is in the joint—local irritation. But if, when the knee is quite insensible, the lameness remains, the evidence is largely, if not conclusively, in favour of the view that the disease is remote, and that the knee itself is sound.

"OF THE DEGREES OF SENSIBILITY IN DIFFERENT ANIMALS.

"Observations made as to the periods of time, and the degree of anæsthesia required to destroy locally the sensibility of animals, have taught me some curious and interesting facts respecting the degrees of sensibility in some animals. The first fact observed is

that in all animals the sensibility is lower than in men. Amongst common domestic animals, the horse and the dog possess the highest sensibility, and after them the guinea-pig. The sensibility of the rabbit is low by comparison, and so is that of the cat and the pigeon.

"Descending in the scale of the animal creation, the reduction is still more marked; and in the frog the whole sensibility is more easily extinguishable than is that of the finger of a man. In fine, common sensibility altogether rests on the production of thermal force, and on the condensation of such force, in the animal, by the nervous centres which act as storers, multipliers, and feeders of sensation."

We consequently possess most potent agents to alleviate pain, and valuable assistants in surgical operations; for the inhalation of chloroform not only renders an animal incapable of experiencing suffering, but also places it in a condition of immobility, which always allows the surgeon to use his knife without let or hindrance, and thus enables him to take his time where delicate and intricate operations have to be performed. The ether spray, by acting locally, *i.e.* only upon structures over which its influence is directed, induces in such regions insensibility to pain, and for this reason is constantly used in human surgery; but unfortunately anæsthetics are not so extensively employed by veterinarians as they should be, considering the assistance they afford them by rendering dumb animals insensible of suffering during protracted and painful operations.

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